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"The Importance of High Standards of Products and Professional Practice in Pharmacy May Well Be More Generally Recognized, and Pharmacy Week Is a Commendable Educational Effort to That End."—President Hoover.

Vol. XX, No. 10 OCTOBER, 1931

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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THE 80th ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN TORONTO, CANADA, IN 1932—August 22nd–27th, Royal York Hotel, Headquarters, R. B. J. Stanbury, 43 Victoria St., Toronto 2, Canada, Local Secretary.

The 1932 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Toronto.

Entered as second-class Matter, January 23, 1917, at the Post Office at Easton, Pa., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103. Act of October 3, 1917; authorized July 10, 1918.

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INTRODUCING THE LOCAL SECRETARY OF THE AMERICAN PHARMACEUTICAL ASSOCIATION FOR 1931–1932.

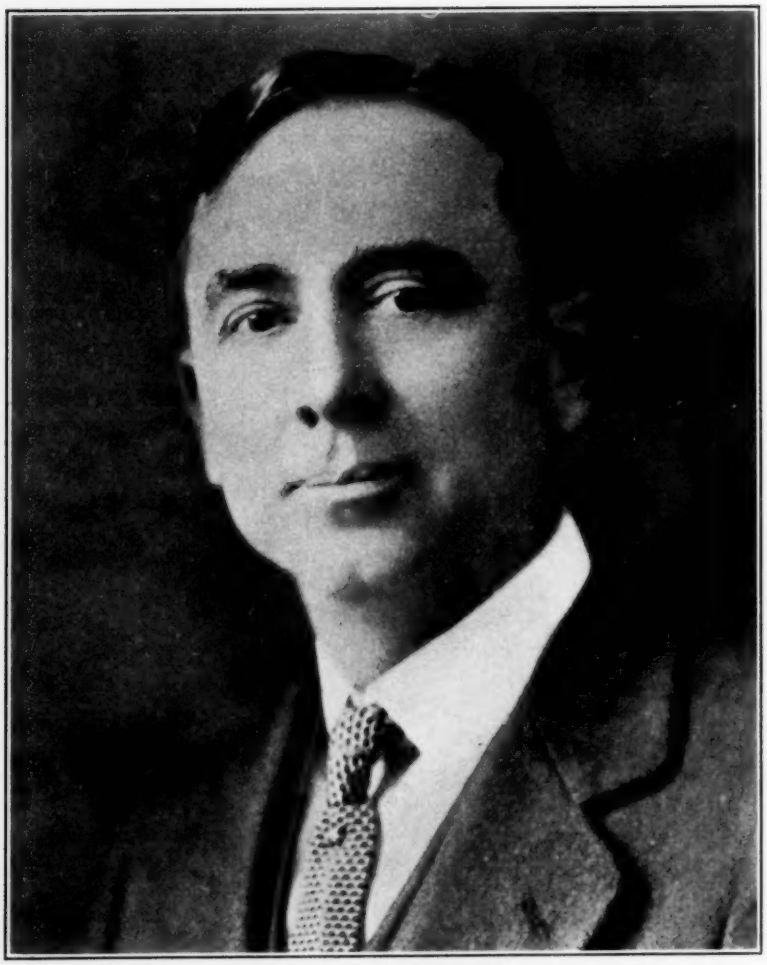
CONSIDERING the activities of Dr. R. B. J. Stanbury, it is apparent that this writing is not a sketch but will serve as an introduction of the Local Secretary for the 80th annual meeting, and that of the Canadian Pharmaceutical Association, in Toronto, next August—the date of meeting has not been definitely fixed—probably, August 22nd–27th, with Royal York Hotel as headquarters.

R. B. J. STANBURY.

The Local Secretary is also secretary of the Canadian Pharmaceutical Association and editor of its official publication—*The Canadian Pharmaceutical Journal.*

The Local Secretary graduated in Medicine from Trinity Medical College. After practicing medicine for a short time he entered the drug field as a manufacturer, organizing the Druggists' Corporation of Canada, Limited. One of the outstanding official acts of Secretary Stanbury resulted in the visit of the late Sir William S. Glyn-Jones to Canada, so that the druggists of Canada might learn from this great leader the ways and means of the Proprietary Articles Trade Association in maintaining prices in Great Britain. He organized the Sir William Glyn-Jones' meetings across Canada and accompanied him on his trip.

Dr. Stanbury became a member of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1927; since then he has attended several of its annual meetings and studied the workings of the organization. The relations of the pharmacists of Canada and the United States have always been cordial and this, the second meeting of the A. PH. A. in Canada, will renew acquaintance and strengthen the professional ties of the two associations. The Local Secretary is a man of action and the attachment of and the relationship with his confrères assures successful annual meetings for both organizations.



DR. TOWNES R. LEIGH.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XX OCTOBER, 1931 No. 10

THE PRESIDENT, AMERICAN ASSOCIATION COLLEGES OF PHARMACY.

Dean Townes Randolph Leigh, newly elected president of the American Association of Colleges of Pharmacy, was born at Fair Oaks Plantation, Panola County, Mississippi, of a long line of distinguished ancestry. After receiving a liberal education in the Arts and Sciences he entered the teaching profession and was soon called to the presidency of the college in which he had been instructing. At that time he was the youngest of American college presidents. Feeling that he desired to devote his time to his calling—that of teaching chemistry—he subsequently resigned the presidency and at the age of twenty-four began his graduate work, first at Harvard, then at Chicago from which institution in 1915 he received the degree of Doctor of Philosophy, *cum laude*.

Dr. Leigh served for a time as Head of the Department of Chemistry at Georgetown College. In 1920 he was called by the University of Florida to head its Department of Chemistry, and in 1923 he was asked by the Florida State Pharmaceutical Association and the Florida State Board of Pharmacy, with the approval of the State Board of Control of the Institutions of Higher Learning, to establish the College of Pharmacy in the University of Florida, of which he has served as Dean from its beginning. The College owes its progress and standing primarily to the splendid and wholesome executive ability of its Dean, and to the high order of scholarship and coöperative spirit of the professors whom he has selected as associates, each of whom holds the degree of Doctor of Philosophy. The new Chemistry-Pharmacy Building on the University Campus is a monument to his diligence, ideals and endeavors. A deserved tribute is paid to the unselfish labor of this man in the published report of the recent Educational Survey Commission of the State of Florida which says in part: "The College of Pharmacy bears every evidence of being effectively administered. If the present rate of progress is maintained this College will be one of real distinction in the scientific world."

For the last four years Dean Leigh has been the national president of the Honorary Chemical Fraternity of *Gamma Sigma Epsilon*. He holds the honorary degree of Doctor of Laws, is a Fellow of the Society of Science, Arts and Letters of London,

and is a member of a number of scientific organizations, the following offices being among many he has filled with honor: President, Kentucky Section of the American Chemical Society; President, Florida Section, A. C. S.; President, Florida Chapter of *Phi Kappa Phi;* President, Gainesville Sector Association of the Army of the United States; President, Gainesville Reserve Officers Association; Adjutant War Service Exchange, War Department, U. S. A.; "Dollar-a-Year Man," Department of Labor; Major, Chemical Warfare Branch, U. S. A.; Member, U. S. Pharmacopœial Revision Committee, XI; President, Gainesville Kiwanis Club; and Florida State Chemist.

Dean Leigh has been honored by membership in the following Greek letter fraternities and societies: *Sigma Xi, Phi Kappa Phi; Sigma Tau; Gamma Sigma Epsilon, Rho Chi; Sigma Chi,* Scabbard and Blade.

Dr. Leigh is the inventor of the Leigh Fog Screen for the protection of vessels against submarines. He has written many pamphlets and articles on chemical and historical subjects and during the War his facile pen was busy in building up the nation's morale. He produced a series of scientific articles designed to build up the confidence of America and her Allies in American men of science. These articles were translated into many foreign languages and widely distributed at strategic points. In this manner he rendered a peculiarly effective, patriotic service, the value of which has been hard to estimate. These articles written with so keen an appreciation of facts and with a broad knowledge of the needs of men gave Dr. Leigh an international reputation both as a scientist and as a man of letters.

It has been said of Dr. Leigh that he possesses the genius to inspire both youth and age; that he suggests rather than commands; that he knows no short cut to perfection; that his rule of life is one of steadfast adherence to the essentials of Christianity. Perhaps nothing could epitomize his life's work better than the motto which he had carved over the main entrance of the Chemistry-Pharmacy Building at the University of Florida: "Enter to think God's thoughts after Him; go forth to apply His thoughts in service." Such is the new president of the American Association of Colleges of Pharmacy.

Left, Cramer's Pharmacy at Paderborn where Sertuerner discovered morphine in 1803; center, Friedrich Wilhelm Adam Sertuerner, 1783 to 1841; right, present pharmacy at Einbeck, formerly Sertuerner's Pharmacy in 1809 to 1820.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase Street, BALTIMORE, MD.

RECLASSIFICATION OF PHARMACISTS IN THE VETERANS' ADMINISTRATION.

THE AMERICAN PHARMACEUTICAL ASSOCIATION sometime ago requested the Veterans' Administration to change the classification of pharmacists from the Subprofessional to the Professional and Scientific Service and to change the title of Assistant Pharmacist to Pharmacist's Assistant. It is very gratifying to record the recent issuance of Supplement No. 8, Revised Regulations for Positions in the Field Service, Veterans' Administration, which, among other changes, directs the following:

"Pharmacist.—Change grade and salary range to: P. &. S.—1 Salary Range $2000, $2100, $2200, $2300, $2400, $2500, $2600.

"Assistant Pharmacist.—Change designation of this position to Pharmacist's Assistant."

The duties of these positions are given as:

"Pharmacist.—To prepare medicines; to compound prescriptions, and to issue drugs for the activity; to maintain stock and supplies and records incident thereto; to prepare reports and supervise such assistants as may be assigned.

"Pharmacist's Assistant.—To assist in the compounding and dispensing of prescriptions, preparation of tinctures, extracts and stock preparations; to prepare necessary reports and to perform such other duties as may be required incident to the general care and operation of the pharmacy."

These changes place pharmacy on a professional basis in the Veterans' Administration and are in accord with the recommendations of the Personnel Classification Board in its report to Congress during the last session, with respect to the classification of Civil Service Employees in the Field Service of the Government. Pharmacists and Pharmacists' Assistants now enter the Administration through the Civil Service.

The legislation to create a commissioned medical service in the Veterans' Administration has not been reported to the House of Representatives by its Committee on Veterans' Legislation. It will be recalled that the ASSOCIATION, in a special hearing on the measure before a sub-committee, submitted an amendment to the bill providing for a Pharmacy Corps on the same basis as the Medical and Dental Corps so that pharmacy will be in the proper position if it should be changed from a civil service to a commissioned status.

The Veterans' Administration employs a larger number of pharmacists than any other governmental service; its recognition of pharmacy as a professional service is very encouraging and opens the way for pharmacists to further demonstrate their value, in the important work which the Administration has in charge.

E. F. K.

THE U. S. P. X ERGOT TEXT.

WHEN the U. S. P. X texts for Ergot and Fluidextract of Ergot were developed almost ten years ago they represented the judgment of those best qualified

in this country to establish Ergot standards and conformed to the then known scientific knowledge of that drug.

Since the last revision, however, extensive studies have been made, both here and abroad, involving the alkaloids of the drug and their isolation, the determination of the potency of the drug and its preparations, by various new assay methods, or modifications of the official method, and also the avoidance of deterioration, especially in the Fluidextract.

As these studies seem to have progressed to a point which promises definite improvement in the assay and preservation of the products recognized by the United States Pharmacopœia and in consideration of the therapeutic importance of this drug, the Committee of Revision is taking the necessary steps to determine the proper course to follow at this time. If it is found that convincing evidence is now at hand to materially improve the existing standard and the method of assay, the Committee has the authority, granted by the Convention, to issue supplements between revisions, and under this authority, could, by vote, establish a modified assay method and standard, and announce these as the official texts to go into force within a reasonable adjustment period.

That the Revision Committee may be in a position to determine a proper course of action, a conference of the Sub-Committee on Bio-assays was held last June with the officials of the Food and Drug Administration and other Bio-assay experts, many of whom are associated with pharmaceutical manufacturers. Since then the Revision Committee has arranged with Dr. E. E. Nelson, an associate of Dr. Edmunds at the University of Michigan—the Chairman of the U. S. P. Bio-assay Sub-Committee—to make for the Committee a specific study of every side of this question. Among other phases of this study Dr. Nelson has personally visited the laboratories of a number who are now assaying Ergot, governmental, private and manufacturers', and observed their exact technique and end-reactions, and in this way brings to the Committee a comprehensive knowledge of the situation. The Chairman of the Committee of Revision of the U. S. P., with Dr. Edmunds and Dr. Nelson, also accepted an invitation to meet with the officials of the Food and Drug Administration and the Ergot Division of the "Contact Committee" of manufacturers in Washington on September 14th, to further consider the question in the light of recent studies and with the hope of a satisfactory solution.

There has never been any doubt as to the position of the Committee of Revision in this and every other question affecting the official standards. The first duty of the Committee is the establishment of standards and assays, if these can be provided, whereby the patient and the doctor are supplied with uniformly potent therapeutic agents. Questions so complex as Ergot, involving the methods of assay and the maintenance of activity in its preparations, make difficult the attainment of this ideal, but the splendid researches in this field during the past five years give promise of success even with so difficult a drug.—E. F. C.

RELATIONSHIP OF EVENTS AND ACTIVITIES.

JAMES Truslow Adams, in *Harper's Magazine* for August contrasts "Perspective" with "close-up" views, and points out that at the moment the most

notable instance of "close-up" view of looking at things is the attitude toward the business depression. He makes a number of historical references which serve the purpose of his message.—Just as a few years ago "people thought it was their last chance to buy 'equities,'" so the people, in 1835, "thought it was their last chance to buy land in the country." Banks loaned money on lands at a valuation far above their production values. This situation was followed by a like condition that came about recently. The records show that the high prices of land were followed by almost "no price;" in some states the decline was so great that the lands brought, in many instances, considerably less than 5 per cent of the purchase prices.

The article discusses the panics of 1857, 1873, 1878, 1893; and without minimizing the present situation the author prefers to consider it intellectually and not emotionally, profiting by an educational system whereby relationships are studied with an understanding of the past as a background of the study. The author cites for illustration of the centering of thought on the present without a study of the past—that "when the market started for the sky one of the large metropolitan clubs pressed for room in its library, removed the entire section of American history, to a storeroom;" he comments, that, perhaps, "a little history would have saved some margins."

Education that directs study of the past in its relation with the present will develop minds better prepared for coping with the dangers of speculative periods.

It is reasonable to assume that experiences like the present will bring out thinkers who can reach the ears of more individuals than is possible for those who study cause and effect and profit thereby, but cannot or do not impress a majority. Dr. Adams concludes that "one of our chief problems is to learn how to keep our mental balance by being able to react against the emotionalistic mush of every close-up by clear thought in terms of relations and backgrounds."

More than ten years ago the late Henry M. Whelpley contributed a paper to the Missouri Pharmaceutical Association which seems to fit in with the foregoing and, therefore, parts of the article are repeated in the following:

"We are living in a day of industrial, economic and social relations, new to even the older ones in the present generation. The World War set in motion waves of human thought which are difficult to measure and impossible to escape. The wage earners have raced with the profiteers in an effort to outdo each other in extravagance. The demand for non-essentials has taxed the capacity of production. The man of salary has been caught between two millstones and is now a pitiable-looking individual of tattered and torn clothing and body. . . ."

"Cool, deliberate judgment is now at a premium. The situation is aggravated by magnification and made more dangerous if belittled. The real truth of the situation may not be apparent any more than is the outcome of a great battle on the eve of a conflict. But what goes up must come down, and prices must, somehow, recede. Now what of the future of pharmacy? That depends on the good judgment and wise action of those who are in business to-day.

"Pharmacists are by education and training taught to be cool, but alert in time of accident and emergency. Their daily work has to do with human lives which are in the balance. Of all in the commercial world, none is so well fitted as the druggist to help the pendulum swing back, slowly and safely. . . ."

A further deduction may be made—the drug business has developed varied phases of merchandising which have prompted the recent surveys of drug store stocks and business conduct, and also surveys of the practice of pharmacy. The good work embodied in the latter will not only stress the importance of pharmacy as a profession, but improve its status and service. There is a relationship of events and various activities and it is our privilege and duty to study them.

PHARMACY A VANISHING PROFESSION?

THE *Atlantic Monthly*, in a recent issue, contained an article by Dr. J. A. Flexner under above caption. The *Journal of Kentucky Pharmaceutical Association* and the *Virginia Pharmacist* have made editorial comments and these are quoted, in part, in the following:

From the *Journal Kentucky Pharmaceutical Association*.—"We have read with some degree of amusement an article written by Dr. J. A. Flexner, recently published in the *Atlantic Monthly* and republished in the *Louisville Courier-Journal* entitled 'Pharmacy—a Vanishing Profession.' Before beginning the practice of medicine, the writer of the article successfully conducted a retail drug store in Louisville.

"We are sure there are a number of 'Old Timers,' excuse us, we mean there are still actively engaged in the retail drug business, many pharmacists who secured their professional training, just as did the writer of the article, and who do not feel that Pharmacy is a 'Lost Art' or even a 'Vanishing Profession.'

"Certainly, none of us want to go back to the days when the apprentice was forced to wash windows and sweep the floors as a part of his tutelage; surely, we do not want to turn back the handle of 'Time' to the days when the apprentice slept in a little hovel of a back room and answered hundreds of unnecessary mid-night calls. . . ."

"The *J. K. P. A.* firmly believes that Pharmacy is progressing, is making greater strides today than at any time in its history; that the Art of Pharmacy is live and virile, is keeping abreast of the best, scientific thought of the day, and that the time will come when there will be two types of drug stores—one, the modern, merchandizing emporium, where drug sundries and patent medicines and luncheonettes and soda fountains will predominate and the other, where prescriptions will be compounded and drugs and pharmaceuticals sold.

"Pharmacy is not a vanishing profession! Pharmacy is not a lost art!! The profession of pharmacy is destined to last as long as medicines are prescribed!!!"

From *The Virginia Pharmacist*.—"Dr. Flexner was a pharmacist, trained under the preceptor system, serving an apprenticeship of window washing and bottle cleaning, and sleeping nights in the back room of the store or in the cellar below. That system turned out some fine pharmacists—useful in their day and time. It had a glamour of romance about it. It makes excellent material for retrospective conversation. Since those days Dr. Flexner has turned to medicine, and his drug store days are behind him. He sees today's pharmacy from the outside and not from the inside. His story makes good reading, but it falls far short of stating the case.

"In Dr. Flexner's days of intimate contact with pharmacy no particular educational training was necessary for the ambitious boy to enter the pharmaceutical field. A State Board of Examiners was not required in any of the states until along in the late seventies and early eighties. Then grammar school smattering was sufficient. Since that day standards have been gradually raised. Complete grammar school work answered for a while, then one, two, three and four years of high school were added here and there, and later college of pharmacy work, mostly of the two-year standard, was adopted by states here and there. Then college graduation, from the two-year course, became the standard requirement in the greater number of the states. Later, 1925, the three-year course in pharmacy became the recognized standard. In 1932 the four-year course in pharmacy will be adopted by all recognized schools of pharmacy, with a well-rounded course, including cultural subjects as well as commercial and technical pharmaceu-

tical training. The products of such courses are of a different type of pharmacists than the boys who gathered in fragmentary manner a limited familiarity with the science of pharmacy. It took an unusual type of student to come through with a thorough knowledge of pharmacy under such a system and with a variety of preceptors. That some outstanding men did develop under that system nobody will deny. That the large majority of pharmacists developed under that system were woefully lacking in the fundamentals of the science they attempted to practice is probably a fact. That most of them would be lost in a present-day prescription room goes without the saying...."

The very title of the article creates a resentfulness in those who are seeking consistently to promote pharmaceutical service. In the opinion of some of them, if not a larger number, nothing was gained by the article in question; some of the older apothecaries might recall the days referred to, but these will readily admit that the educational opportunities and requirements of pharmacists are far different to-day than they were during the period that some designate as the "good old days."

Left.—Monument to Pelletier and Caventou, French pharmacists, discoverers of quinine. Monument stands in the Boulevard St. Michel, Paris. Right.—Louis Hébert monument, pioneer pharmacist and colonist of Canada. (In city of Quebec.)

SCIENTIFIC SECTION

DETERIORATION OF CERTAIN MEDICAMENTS UNDER THE INFLUENCE OF LIGHT.*

BY H. V. ARNY, ABRAHAM TAUB AND ABRAHAM STEINBERG.

I.—INTRODUCTION.

This research is a direct outcome of the creation in 1926 by the Section on Dispensing of the AMERICAN PHARMACEUTICAL ASSOCIATION of a special "Committee on Colored Glass Containers." This committee consisting of Messrs. Becker, Dunning and Arny, reported to the ASSOCIATION in 1927, 1928 and 1929 and the reports will be found in our JOURNAL of these years. Having reported on the available information as found in the chemical and pharmaceutical literature, it became apparent that more extended work, under conditions actually obtaining in present-day American pharmacy should be inaugurated and the senior author of this paper secured a fund of $2000 for this purpose; the subscriptions being obtained through the generosity of the following firms and organizations.

Subscriptions of $100 each from the Dow Chemical Co., Midland, Mich.; Drug Products Co., Long Island City, N. Y.; Hynson, Westcott and Dunning, Baltimore, Md.; Lehn & Fink, Bloomfield, N. J., and New York City; Eli Lilly & Co., Indianapolis, Ind.; William S. Merrell Co., Cincinnati, Ohio; Merck & Co., Rahway, N. J., and New York City; H. K. Mulford Co., Philadelphia, Pa.; Parke, Davis & Co., Detroit, Mich.; Charles Pfizer & Co., Brooklyn and New York City; Perdue Frederick Co., New York; Sharp & Dohme, Baltimore, Md.; Dr. William Jay Schieffelin, New York; E. R. Squibb & Sons, Brooklyn and New York City; Frederick Stearns & Co., Detroit; The Upjohn Co., Kalamazoo, Mich.; and W. R. Warner & Co., New York.

A subscription of $100 from the Proprietary Association.

A grant of $200 from the A. PH. A. Research Fund.

As research fellow, Dr. Arny selected Abraham Steinberg, B.S., who gave to the project his devoted attention during 1929–1930 and 1930–1931 as a student of the graduate course of the College of Pharmacy of Columbia University. Mr. Steinberg was awarded the Columbia degree of Doctor of Pharmacy in June 1931 and submitted in partial fulfilment of the requirements set for the doctor degree an inaugural dissertation embodying the results of the work set forth in this paper. Condensation was essential as Dr. Steinberg's "Arbeit" covers 339 typewritten pages. In connection with the $2000 fund mentioned above, all of it was devoted to the payment of the fellowship held during two years by Dr. Steinberg. Apparatus and routine reagents were available in the laboratories of Columbia University College of Pharmacy. The glass bottles used were donated by the following firms:

Corning Glass Works, Fairmount Bottle Co., Maryland Bottle Co., Owens-Illinois Co., Wheaton Bottle Co. and Whitall Tatum & Co.

The official chemicals and pharmaceuticals employed in the actual tests were kindly furnished by the following firms:

Charles Cooper & Co., Eli Lilly Co., Merck & Co., Parke Davis & Co., Charles Pfizer & Co., Schieffelin & Co., and E. R. Squibb & Sons.

The simpler pharmaceuticals used in the tests were prepared by Mr. Steinberg in our laboratory. The research itself divided naturally into three groups:

(*a*) Study of the light transmission of the commercial glass containers employed.

(*b*) Examination of each chemical studied as to its pharmacopœial quality.

(*c*) Exposure of each medicament under observation to varying degrees of light, with subsequent examination of each sample as to degree of deterioration.

As to "*a*" Professor Taub will report; while "*b*" and "*c*" are discussed by the senior author.

---

* Joint Session, Scientific Section and Section on Practical Pharmacy and Dispensing.

II.—SPECTRAL TRANSMISSION OF COLORED GLASS.

(A. Taub and A. Steinberg.)

An adequate study of the influence of light on chemicals involves not only an examination of the substances affected, but also of the character of the light coming into play. Previous workers have noted some of the effects of isolated portions of the light spectrum by the use of special glass and liquid light filters. The purpose of the present study was to determine how well the commercially available glass containers would protect light-sensitive substances. Upon investigating the market it was found that while many types of glass containers were being manufactured, from the standpoint of light transmission they could all be represented by a selection of eight types. These included 1 flint, 3 green, 1 blue and 3 amber glasses. Of the 3 green, one had only a faint green tint, one was medium dark and one almost black. The three ambers were very similar, differing only slightly in depth of color. In addition to these, five Corning glasses and two special glasses were selected for certain properties which they possessed in cutting out certain parts of the spectrum.

In order to quantitatively determine the transmission of the light through these glasses, the spectrophotometer was employed. Spectrophotometry differs from colorimetry in that the former measures the amount of light energy transmitted at each wave-length. Colorimetry merely measures the sensation produced upon the observer; it is subject to abnormalities of vision. Spectrophotometry is the more accurate and fundamental method. For example, two glasses may appear to the eye as having the same color, yet their spectral transmissions may be quite different. The chemical effects produced are dependent upon the kind of light transmitted and not upon the appearance of the glass to the observer.

For work in the visible spectrum, from 400–800 mμ we employed the Bausch and Lomb Spectrophotometer that is a part of the equipment of the physics laboratory of the College of Pharmacy. This consists of a constant deviation prism spectrometer and a polarization photometer. A white light source is used. At any wave-length, the per cent of the original light transmitted through an interposed specimen can be read off directly from the scale.

For transmission values in the ultraviolet region, we employed a Hilger quartz spectrograph with sector photometer, kindly placed at our disposal by the Department of Physics of Columbia University. The light source was a high voltage iron arc, permitting readings from 230–500 mμ. The transmission values are obtained by measuring the densities of the images of comparison spectra on a photographic plate.

The thickness of the glass is of course an important factor in the transmission of light. Representative pieces were selected by cutting out the sides of the bottles and grinding them flat when necessary. For converting light transmissions of one thickness to that of another thickness of glass, use was made of a graph worked out by the Bureau of Standards (Technological Paper, No. 148).

The curves on the following three plates (Figs. 1, 2 and 3) represent the transmission values of all the glasses used in the research. In addition, pyrex is included since it was used as the inner container for the chemicals. Window glass

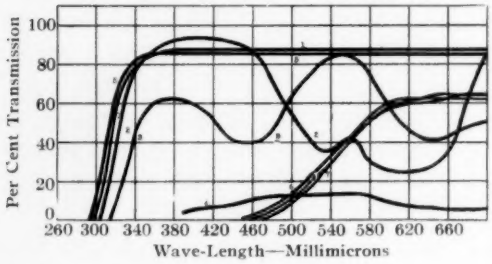
is also included since all light passed through this first, with the intent of simulating the conditions in the pharmacy.

A study of these curves reveals some interesting observations:

(1) Flint No. 1 and bottle green No. 5 allow not only a good percentage of the visible rays but also the ultraviolet rays down to 300 mμ to be transmitted. They are poor preserving glasses.

Spectrophotometric Transmission Curves,
Fig. 1.
COLORED GLASS CONTAINERS.

1—Flint A 2.8 mm.	5—Green C 2.5 mm.
2—Blue A 2.5 mm.	6—Amber A 2.4 mm.
3—Green A 2.8 mm.	7—Amber B 2.5 mm.
4—Green B 2.5 mm.	8—Amber C 2.4 mm.



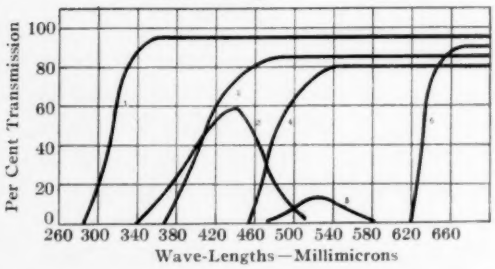
(2) Green No. 3 has a pleasing green color of medium depth. It allows over 40 per cent of all the rays down to 340 mμ to be transmitted. It also is a poor preserving glass.

(3) Green No. 4 is greenish black in appearance. This lets through not more than 13 per cent of light at any wave-length. Yet, the fact that from 2 to 5 per cent of ultraviolet is transmitted, causes it to permit some deterioration. The curve shows that there is such a low total transmission of light that the glass is almost opaque which really defeats the purposes of a glass container.

(4) Ambers Nos. 6, 7 and 8 (or A, B and C) all show marked similarity in their curves. They cut off the light at about 460 mμ. These show a marked protective action even though as much as 60 per cent of light is transmitted at some wave-lengths. In other words, while presenting a fairly transparent ap-

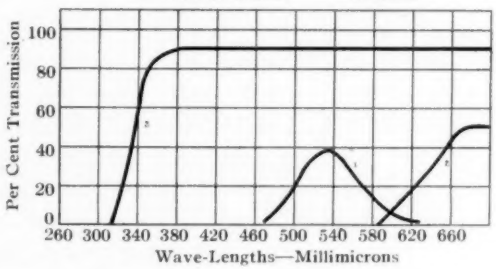
Spectrophotometric Transmission Curves,
Fig. 2.
CORNING COLOR-FILTERS.

1—Pyrex	2.0 mm.
2—Nultra	7.4 mm.
3—Lantern Blue	4.2 mm.
4—Noviol	6.0 mm.
5—Sextant Green	4.9 mm.
6—Heat Resisting Red	3.3 mm.



Spectrophotometric Transmission Curves,
Fig. 3.
SPECIAL GLASS PLATES.

1—Coeburgh Green	2.3 mm.
2—Red Flash	3.0 mm.
3—Window-Pane	3.0 mm.



pearance, the fact that they cut off the ultraviolet and deep blue makes them of marked value as protective glasses. Because of the similarity in these three glasses, only "A" and "B" were used in the research described below.

(5) Blue No. 2 is of medium depth of color and high transparency. It transmits light down to about 300 mμ, letting through as much as 90 per cent of ultraviolet at some wave-lengths. It is a very poor protective glass.

It must not be assumed that only ultraviolet rays may produce deterioration

of chemicals, although this is true for most substances. Other wave-lengths of light also affect chemicals. It was for this reason that the Corning glass filters were studied. These are noteworthy for their sharp cut-offs; that is, the sharp transitions between high transmission and strong absorption of light.

Thus, "Nultra" cuts off all waves below 370 mμ, "Noviol" below 450 mμ, and "Heat Resisting Red" all waves below 620 mμ.

"Lantern Blue" cuts off all rays below 340 and above 520 mμ, while "Sextant Green" cuts off all rays below 470 and above 580 mμ.

Of all these glasses, "Noviol" has the greatest interest. It cuts off all ultraviolet and has a very good protective action; yet it is a highly transparent glass of light yellow color. Its cost, however, is at present too high for general bottle use.

Of the special glasses, the Coeburgh green cuts off below 470 and above 630 mμ. It is a good protective glass but not commercially available. The red flashed glass cuts off all rays below 590 mμ. It and the Corning Red are the best protective glasses of those studied. However, its cost prohibits its use for commercial purposes.

Window glass and pyrex of course transmit considerable ultraviolet light, the former down to 320 mμ and the latter down to 290 mμ.

It can readily be seen then that only a spectrophotometric examination can truly indicate the protective value of glass. The visibility and color presented to the unaided eye are no criteria. In general, a better protecting glass is one which cuts off ultraviolet and has a steep ascending curve toward the red end of the spectrum rather than a flat curve throughout. Of course the final test lies in observing the results produced upon the chemical itself when stored in these containers.

III.—DETERIORATION OF CHEMICALS.

(H. V. Arny and A. Steinberg.)

While excellent work on this subject has been reported by Coeburgh and by Eisenbrand, neither of these investigators studied the chemicals in commercially available glass containers. As the task entrusted by the AMERICAN PHARMACEUTICAL ASSOCIATION to its "committee on glass containers" was specifically a study of deterioration of substances stored in commercial containers, the work now being reported was carefully planned to meet this condition as far as light-influence was concerned. Of course, an important factor in such a study is the effect of chemicals in the glass-batch upon the chemicals stored in the finished container. This disturbing factor we successfully eliminated by the use of pyrex tubes as described hereafter. A second factor demanding consideration was the question of the proper sealing of the container. Due cognizance was taken of the influence of air and of atmospheric moisture and, as outlined below, the influence of various types of sealing (even in gas-filled or evacuated ampuls) was given due attention.

Experimental Methods.—Each chemical used was subjected to a complete physical and chemical examination as to its official (U. S. P. or N. F.) quality.

The chemicals as soon as received or made, were placed (in their original containers) in a dark closet in our laboratory "dark room" and there remained throughout the two years of research. Whenever it was necessary to remove portions of the contents for experimental purposes, the containers were opened in the dark room in the presence of an electric light of small intensity. Never

were these chemicals in their original containers exposed to the direct light of the sun. To eliminate the question of the alkalinity of the glass containers as a factor influencing deterioration we secured Pyrex test-tubes of such size to fit into the glass containers under examination. Pyrex glass is generally conceded to be less apt to affect the chemical stored therein than an ordinary glass bottle, since Pyrex is practically free from alkalinity as indicated by our own tests with phenolphthalein and with strychnine nitrate.

In most cases, the Pyrex test-tube containing the chemical was stoppered with an ordinary cork. In some cases where cork was likely to be attacked, rubber stoppers were employed. In still other cases, the stopper (cork or rubber) was covered with tin foil prior to insertion, while in several cases, the stopper was coated with melted paraffin prior to use. Lastly, in special cases, the Pyrex tube was sealed into ampul form either with a pocket of air above the chemical, or evacuated or filled with an inert gas (nitrogen or carbon dioxide).

In a very few cases, where the amount of the medicament (pharmaceutical solution) required for assay was larger than the capacity of the Pyrex tube, this solution was placed into the glass bottle itself. This was done only after experimentation indicated that the particular container was free from substances that might affect the solution studied.

The bottles containing the Pyrex tubes were stoppered either with corks or cotton plugs and were placed in specially constructed panels equipped with panes of window glass. This procedure was followed upon the assumption that bottles behind window panes would more approximate drug store conditions where the light rays pass through glass windows before reaching the bottles. Data given herein indicate, however, that this test was unduly severe. These sets of bottled chemicals in the glass-covered panels were exposed on the roof of the college building where direct sunlight or direct daylight obtained during the daytime hours of exposure of these specimens; one-fifth were exposed continuously over a period of 12 months, one-fifth were exposed during 6 months and the other fifths were exposed 4, 2 and 1 month, respectively. *In the pages which follow, this experimental condition will be called "direct daylight."*

A second group of the same chemicals were arranged in orderly fashion upon the shelves of a bookcase provided with glass doors, situated in the office of the senior author. These batches were designed to simulate average drug store conditions as to heat and light. *On the pages which follow this condition will be called "diffused light."*

A third batch, kept in a dark closet in our "dark room" served as controls giving definite checks on the important question whether deterioration in the chemicals under observation were actually caused by the action of light or by some other factor.

Chemicals Studied.—Of the 400 or more light-sensitive chemicals and pharmaceuticals listed in the United States Pharmacopœia and the National Formulary, 35 were given our careful study. Each of these is discussed below. These thirty-five were chosen because of frequent statements in the literature as to their light-sensitivity and it is interesting to note below that several of these do not deserve their bad reputation. These chemicals (or solutions) were stored as mentioned above; 1400 different specimens exposed to direct daylight on the roof; 450

specimens in diffused light in a glass-doored bookcase in the office; and 300 in a dark closet in our "dark room."

In measuring deterioration, various methods had to be followed. Wherever feasible, the official assay process was employed. This seemingly perfect method did not always indicate real deterioration. For instance, diluted hydriodic acid, syrup of hydriodic acid and syrup of ferrous iodide were stable in all types of glass containers under all light conditions to which we exposed them as far as iodide content was concerned, but within 2 to 6 months of direct daylight (according to color of container) these preparations became so dark as to render them unsalable.

In a second group of chemicals under examination (notable examples being ether and chloroform) deterioration was indicated by official tests for specific impurities. In a third and large group, the criterion of deterioration in our work (as well as in commercial practice) was the change in color.

It is unnecessary in this paper to reproduce the wording of the official assays of those chemicals so judged or the official tests of the chemicals in the second group. As to the third group, where color changes are the only practical criterion, Dr. Steinberg expressed those changes in his dissertation in terms of the Ridgeway Color System as presented in that valuable book of standard charts entitled "Color Standards and Nomenclature." For the sake of simplicity, we express color deterioration in the tables which follow in the more elastic terms "considerable darkening," "slight darkening" and "no change." Turning to the tables given below; first gives general findings as to deterioration after exposure during one year.

TABLE IV.—GENERAL FINDINGS AS TO DETERIORATION.

Exposure for 1 Year.

Stable in all types of glass containers under all conditions.	Stable in all conditions of diffused light.	Unstable in all conditions of light and darkness.
Hydriodic acid, dilute (as to HI content)	Adrenalin hydrochloride solution	Apomorphine hydrochloride, solution
Hydriodic acid, syrup (as to HI content)	Benzoic acid	Phenol (one sample)
Hydrobromic acid, dilute	Chloroform	Physostigmine salicylate, solution
Mercuric iodide	Ephedrine hydrochloride solution	Solution of arsenic and mercuric iodide
Phenol (one sample)	Hydriodic acid, dilute (as to color)	Solution of chlorinated soda
Syrup of ferrous iodide (as to FeI_2 content)	Hydriodic acid, syrup (as to color)	Spirit of ethyl nitrite
Sulphurated potassa	Mercurous chloride	
	Pyrogallol	
	Resorcinol	
	Syrup of ferrous iodide (as to color)	
	Thymol iodide	

Commenting on this table, it will be seen that out of the 20 medicaments reported, 3 were stable under all conditions of exposure, whether in direct daylight or in diffused light, 11 were stable after exposure one year in diffused light resembling conditions obtaining in the average drug store; in one case (phenol) permanence was dependent upon the presence or absence of a stabilizer, while 5

were unstable in all conditions of light and darkness. The latter group will be considered as individuals below.

Table V reports in definite figures the percentage of deterioration shown by actual assay of eleven chemicals (or preparations) exposed during one year in diffused light as described above. It may be stated that our analytical figures indicate that exposure to direct daylight was too severe a test for most of the chemicals studied. Comparing the chemicals exposed in direct light (on the roof) and in diffused light (in a closet with glass doors) it is noted that there is about 3 to 12 times as much deterioration in direct daylight as is noted in samples kept in diffused light. Moreover, other factors, such as evaporation, freezing in winter and explosions in summer rendered our analytic figures as to deterioration in direct daylight less reliable than those obtained from samples maintained under the more normal condition of diffused light. Analytical figures as to each sample exposed to direct daylight are to be found in Dr. Steinberg's dissertation. Moreover, Table No. IV reports upon the effect of direct daylight in general terms.

TABLE V.—DEGREE OF DETERIORATION IN GLASS CONTAINERS AFTER TWELVE-MONTH PERIOD EXPOSURE TO DIFFUSED SUNLIGHT.

Percentage of Deterioration Shown by Actual Assay.

Chemical.	Flint. A.	Amber. A.	Amber. B.	Blue. A.	Green. [A.	Green. B.	Green. C.]	Control.*
Hydriodic acid, dilute	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydriodic acid, syrup	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydrobromic acid, dilute	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydrocyanic acid, dilute	15.7	24.7	31.1	19.7	25.9	28.7	18.7	1.7 to 18.7
Solution of arsenic and mercuric iodide	39.2	33.0	29.5	22.5	30.0	65.8	28.3	30.9
Solution of chlorinated soda	50.6	28.0	34.4	34.3	35.4	38.3	42.9	37.6
Solution of chlorine, compound	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Solution of hydrogen peroxide, A	60.8	9.4	8.2	19.8	18.0	18.0	13.8	7.7
Solution of hydrogen peroxide, B	88.1	13.7	31.0	45.8	57.0	33.3	46.2	4.11
Spirit of ethyl nitrite	43.3	57.3	61.3	60.5	86.4	100	61.3	15.8
Sulphurated potassa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Syrup of ferrous iodide	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

* Samples from same batch kept in darkness for one year.

The next table discusses the degree of deterioration, after one year of exposure in diffused light, of 22 chemicals in which change is best indicated by specific tests or by the darkening of the product.

TABLE VI.—DETERIORATION AFTER ONE YEAR OF EXPOSURE TO DIFFUSED LIGHT AS SHOWN BY COLOR CHANGE OR BY SPECIAL TESTS.

Abbreviations.

C.D.—considerable darkening. S.D.—slight darkening. N.C.—no change. Det.—deterioration shown by chemical tests.

Chemical.	Flint. A.	Amber. A.	Amber. B.	Blue. A.	Green. [A.	Green. B.	Green. C.]	Control.*
Adrenaline hydrochloride solution	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Apomorphine hydrochloride solution	C.D.	C.D.	C.D.	C.D.	C.D.	C.D.	C.D.	C.D.
Benzoic acid	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.

Betanaphthol	S.D.	N.C.	N.C.	S.D.	S.D.	N.C.	S.D.	N.C.
Chloroform A	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Chloroform B	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Ephedrine hydrochloride solution	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Ether A	Det.	Det.	N.C.	Det.	Det.	Det.	Det.	N.C.
Ether B	Det.	N.C.	N.C.	Det.	Det.	N.C.	Det.	N.C.
Ferric citrate	C.D.	S.D.	S.D.	C.D.	C.D.	S.D.	C.D.	N.C.
Ferric phosphate, soluble	C.D.	N.C.	N.C.	C.D.	C.D.	N.C.	C.D.	N.C.
Ferric pyrophosphate, soluble	C.D.	N.C.	N.C.	C.D.	C.D.	N.C.	C.D.	N.C.
Ferrous iodide, syrup	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Hydriodic acid, diluted	N.C.	N.C.	S.D.	N.C.	N.C.	N.C.	N.C.	N.C.
Hydriodic acid, syrup	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Hydrobromic acid, diluted	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Mercuric iodide, red	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Mercuric oxide, red	C.D.	C.D.	S.D.	C.D.	C.D.	S.D.	C.D.	N.C.
Mercuric oxide, yellow	S.D.	S.D.	N.C.	S.D.	S.D.	N.C.	S.D.	N.C.
Mercurous chloride	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Mercurous iodide, yellow	C.D.	C.D.	C.D.	C.D.	C.D.	C.D.	C.D.	N.C.
Phenol (one sample)	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.
Physostigmine salicylate solution	All erratic.							
Pyrogallol	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Resorcinol A	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Resorcinol B	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Santonin	Yellow	N.C.	N.C.	Yellow	Yellow	N.C.	Yellow	N.C.
Silver nitrate	S.D.	N.C.	N.C.	S.D.	N.C.	N.C.	S.D.	S.D.
Thymol iodide	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.

* Samples from same batch kept in darkness for one year.

We now turn to two tables indicating the speed of deterioration of 33 chemicals (or preparations) stored in containers exposed to (*a*) direct daylight (Table VII) and to (*b*) diffused light (Table VIII). These tables are expressed in terms of the number of months before deterioration was observed. In the case of direct daylight, it will be noted that in several cases deterioration occurred in less than one month of exposure. Obviously, the notation on the tables "−1," "−3," etc., indicate deterioration occurred in less than one month, less than three months, etc.

TABLE VII.—LIMIT OF STABILITY OF THE CHEMICALS IN THE COLORED GLASS CONTAINERS EXPOSED TO DIRECT DAYLIGHT.

(Expressed in Months.)

Chemical.	Flint. A.	Amber. A.	Amber. B.	Blue. A.	[A.	Green. B.	C.]	Control.*
Adrenaline hydrochloride (0.1% solution)	− 1	1	1	− 1	− 1	− 1	− 1	+12
Apomorphine hydrochloride (0.5% solution)	− 1	− 1	− 1	− 1	− 1	− 1	− 1	− 1
Benzoic acid	4	+12	+12	4	4	+12	4	+12
Betanaphthol	− 1	1	1	− 1	− 1	1	− 1	+12
Chloroform A	2	6	6	2	2	6	2	+12
Chloroform B	2	6	6	2	4	6	2	+12
Ephedrine hydrochloride solution	− 1	1	1	−1	− 1	− 1	− 1	+12

Ether A	− 1	1	1	− 1	− 1	1	− 1	+12
Ether B	− 1	1	1	− 1	− 1	1	− 1	+12
Ferric citrate	− 1	− 1	− 1	− 1	− 1	− 1	− 1	+12
Ferric phosphate, soluble	− 1	− 1	− 1	− 1	− 1	− 1	− 1	+12
Ferric pyrophosphate, soluble	− 1	− 1	− 1	− 1	− 1	− 1	− 1	+12
Hydriodic acid, diluted:								
(As to HI content)	+12	+12	+12	+12	+12	+12	+12	+12
(As to color)	6	12	12	2	4	4	4	+12
Hydriodic acid, syrup:								
(As to HI content)	+12	+12	+12	+12	+12	+12	+12	+12
(As to color)	4	4	4	4	4	4	2	+12
Hydrobromic acid, diluted	+12	+12	+12	+12	+12	+12	+12	+12
Hydrocyanic acid, diluted	− 1	− 1	− 1	− 1	− 1	− 1	− 1	− 1
Mercuric iodide	+12	+12	+12	+12	+12	+12	+12	+12
Mercuric oxide, red	− 1	− 1	− 1	− 1	− 1	− 1	− 1	+12
Mercuric oxide, yellow	− 1	− 1	− 1	− 1	− 1	− 1	− 1	+12
Mercurous chloride	− 1	+12	+12	− 1	− 1	+12	− 1	+12
Mercurous iodide	− 1	− 1	− 1	− 1	− 1	− 1	− 1	+12
Phenol (one sample)	− 1	1	1	− 1	− 1	1	− 1	1
Physostigmine salicylate (0.5% solution)	− 1	− 1	− 1	− 1	− 1	− 1	− 1	− 1
Pyrogallol	− 1	6	6	− 1	− 1	6	− 1	+12
Resorcinol	− 1	2	2	− 1	− 1	1	− 1	+12
Santonin	− 1	1	1	− 1	− 1	− 1	− 1	+12
Silver nitrate	2	4	4	2	2	+12	2	4
Solution of arsenic and mercuric iodide	− 1	− 1	− 1	− 1	− 1	− 1	− 1	1
Solution of chlorinated soda	− 1	− 1	− 1	− 1	− 1	− 1	− 1	1
Solution of chlorine, compound	− 1	− 1	− 1	− 1	− 1	− 1	− 1	− 1
Solution of hydrogen peroxide A	− 1	1	1	− 1	− 1	− 1	− 1	2
Solution of hydrogen peroxide B	− 1	1	1	− 1	− 1	− 1	− 1	2
Spirit of ethyl nitrite	− 1	− 1	− 1	− 1	− 1	− 1	− 1	4
Sulphurated potassa	+12	+12	+12	+12	+12	+12	+12	+12
Syrup of ferrous iodide:								
(As to FeI_2 content)	+12	+12	+12	+12	+12	+12	+12	+12
(As to color)	1	1	1	1	1	1	1	1
Thymol iodide	− 1	4	4	− 1	− 1	4	− 1	+12

* Samples from same batch kept in darkness for one year.

Table VIII is somewhat incomplete, since our original aim was to use the samples, kept in diffused light only, as a check even as obtained in the case of the samples kept in the dark. Those where deterioration was detected by color change were examined month by month. Those requiring chemical testing or assaying were so treated only at the end of the second or the twelfth month. This explains such large stretches of time such as "+2" and "12" found under solution of hydrogen dioxide.

TABLE VIII.—SPEED OF DETERIORATION IN GLASS CONTAINERS EXPOSED IN DIFFUSED LIGHT.

(Expressed in Months.)

	Amber. A.	Amber. B.	Blue.	Green. B.	Green. A.	Flint.
Adrenalin hydrochloride (0.1% solution)	12	12	12	12	12	12

Apomorphine hydrochloride (0.5% solution)	− 1	− 1	− 1	− 1	− 1	− 1
Benzoic acid	12	12	12	12	12	12
Betanaphthol	12	12	6	12	6	6
Chloroform	12	12	12	12	12	12
Ephedrine hydrochloride (0.5% solution)	12	12	12	12	12	12
Ether	12	12	−12	12	−12	−12
Ferric citrate	6	6	− 3	6	− 3	− 3
Ferric phosphate	12	12	− 3	9	− 3	3
Ferric pyrophosphate	12	12	− 3	12	− 3	− 3
Hydriodic acid, diluted						
(As to HI content)	12	12	12	12	12	12
(As to color)	12	6	12	12	12	12
Hydriodic acid, syrup						
(As to HI content)	12	12	12	12	12	12
(As to color)	12	12	12	12	12	12
Hydrobromic acid, diluted	12	12	12	12	12	12
Hydrocyanic acid, diluted		Erratic				
Mercuric iodide	12	12	12	12	12	12
Mercuric oxide, red	− 3	− 3	− 3	− 3	− 3	− 3
Mercuric oxide, yellow	− 6	12	− 3	12	− 3	− 3
Mercurous chloride	12	12	12	12	12	12
Mercurous iodide	− 3	− 3	− 3	− 3	− 3	− 3
Phenol, liquefied		Erratic				
Physostigmine salicylate, (0.5% solution)		Erratic				
Pyrogallol	12	12	12	12	12	12
Resorcinol	12	12	12	12	12	12
Santonin	12	12	− 3	12	− 3	− 3
Silver nitrate	12	6	6	12	12	6
Solution of arsenic and mercurous iodide		Erratic				
Solution of chlorinated soda	2	− 2	− 2	2	2	2
Solution of chlorine, compound	− 1	− 1	− 1	− 1	− 1	− 1
Solution of hydrogen dioxide						
(Sample A)	12	12	+ 2	+ 2	+ 2	+ 2
(Sample B)	12	+ 2	+ 2	+ 2	+ 2	+ 2
Spirit of ethyl nitrite	− 2	− 2	+ 2	+ 2	+ 2	+ 2
Sulphurated potassa	12	12	12	12	12	12
Syrup of ferrous iodide						
(As to FeI_2 content)	12	12	12	12	12	12
(As to color)	12	12	12	12	12	12
Thymol iodide	12	12	12	12	12	12

The foregoing tables report on 33 of the 35 chemicals (or preparations) studied, the others being the two silver proteins which did not satisfactorily fit into tabulations. These are reported below in the discussion of the individual chemicals.

(To be continued)

PUBLICITY FOR PHARMACISTS IN AUSTRALIA.

Victoria has followed the lead of New South Wales in arranging a series of radio talks giving publicity to the professional side of pharmacy—these are being sponsored by the Pharmaceutical Society and are broadcasted every evening. Differences of opinion seem to obtain, some contending that such publicity is detrimental to the dignity of the profession.

THE ANALYSIS OF ARSENOUS IODIDE.*

BY WILLIAM J. HUSA.**, ***

Four samples of arsenous iodide were analyzed; only one sample was of acceptable quality although all were labeled as U. S. P.

INTRODUCTION.

The purpose of this article is to call attention to the unsatisfactory quality of some arsenous iodide recently purchased and to present some suggestions regarding methods for the analysis of this U. S. P. chemical.

HISTORICAL REVIEW.

In 1900, R. Dupouy (1) reported that a sample of arsenous iodide when treated with water left a yellow insoluble residue of SbOI, this compound being formed by the action of water on SbI_3 contained in the drug. The insoluble residue from a second sample consisted of SbOI and free arsenic, while a third sample left a residue of free arsenic alone. Another sample contained an excess of free iodine and formed a clear brown solution which gradually became colorless.

In an analysis of a commercial sample of arsenous iodide, Dott (2) found 1.28 per cent of insoluble matter. He reported that some commercial samples contained free arsenic and arsenic trioxide and that there was a tendency toward a deficiency in iodine. In 1903, (3) Duncan mentioned the variability of commercial samples of arsenous iodide.

In connection with a study of Donovan's Solution (4), Husa and Enz examined samples of arsenous iodide purchased in 1927. The products of three different manufacturers were found to differ somewhat in physical properties and rapidity of solution. One of the specimens contained a slight amount of free iodine. The differences noted were not considered serious as each sample yielded Donovan's Solution of U. S. P. strength. Arsenous iodide made by one of the manufacturers was selected for the work in hand and it was thought that variability in the material used would thus be largely eliminated. However, arsenous iodide purchased from the same manufacturer in 1929 showed entirely different properties in some respects (5). Instead of rapidly dissolving and yielding a Donovan's Solution of p_H 1.2 as was the case with the 1927 product, the 1929 product dissolved very slowly and the p_H of Donovan's Solution made from it was 1.3.

EXPERIMENTAL DATA.

Quality of Arsenous Iodide.—When a further study of Donovan's Solution was taken up in 1930 by the present author, the brand of arsenous iodide which had previously been adopted was again used in the beginning. However, it was found that Donovan's Solution made from samples purchased in 1929 and 1930 showed a pronounced deficiency in trivalent arsenic. For convenience we may refer to the manufacturer of this brand as manufacturer A. A detailed study was then made of the samples of this brand, and of the products of two other manufacturers, whom we may designate as B and C.

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* Presented before the Scientific Section, A. PH. A., Miami, Fla., 1931.

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*** With the assistance of J. M. Carter, C. Kazarian, L. Magid and H. Smith.

Analytical Methods Used.—The trivalent arsenic was determined by titration with $N/10$ iodine and calculated as AsI_3. Total arsenic, calculated as AsI_3, was obtained by the method of Rosin (6). The percentage of moisture was found by drying over conc. H_2SO_4. Total iodide, calculated as AsI_3, was determined by the U. S. P. method.

The determination of free iodine offered some difficulties. When some of the bottles of arsenous iodide were opened, the odor of free iodine was noted. On dissolving such a sample in water the color of the solution was distinctly yellowish at first, becoming colorless in a few minutes, the free iodine apparently being reduced to hydriodic acid through oxidation of some of the arsenous acid to arsenic acid. When some water was placed in a beaker, starch solution added, and solid arsenous iodide added with stirring, a deep blue color was observed, showing the presence of free iodine in the freshly prepared solution. It was thought that the reduction of iodine to HI would be delayed or prevented in acid solution and on this basis the free iodine was determined as follows: 0.5 gram of arsenous iodide was triturated in a mortar with dilute sulphuric acid (4 cc. of the concentrated acid and 96 cc. of water), the mixture washed into an Erlenmeyer flask and titrated with $Na_2S_2O_3$ V.S., using starch as indicator.

The analytical results were as follows:

TABLE I.—SOURCE OF ARSENOUS IODIDE.

	Manufacturer A. Sample I.	Manufacturer A. Sample II.	Manufacturer B.	Manufacturer C.
Trivalent arsenic calcd. as AsI_3	84.5%	88.8%	99.0%	107.6%
Total arsenic calcd. as AsI_3	85.0%	89.0%	99.5%	107.6%
Moisture	0.3%	0.1%	0.4%	0.2%
Free iodine	0.1%	0.1%	0.1%	0.0%
Iodide calcd. as AsI_3 (U. S. P. method)	115.5%	110.2%	98.9%	

DISCUSSION OF RESULTS.

Products of Manufacturer A.—Sample I of manufacturer A was about 15% deficient in arsenic content, and the total iodide calculated as AsI_3 as determined by the U. S. P. method for iodides was about 15% too high. Sample II of the same manufacturer gave results of the same nature. From these results it might seem that the samples were contaminated with the iodide of some metal of lower equivalent weight than arsenic, since the results were low in arsenic and high in iodide. However, on going through the procedure for the qualitative analysis of the common metals, tests were obtained only for calcium, potassium and traces of nickel and sodium. Further investigation would be necessary before the exact nature of the impurities could be ascertained but the results definitely indicate that these samples of arsenous iodide are greatly deficient in arsenic.

Product of Manufacturer B.—The product of manufacturer B was clearly a high-grade product and was adopted for further work on Donovan's Solution which is being reported in another paper. In a minor respect this product did not meet the U. S. P. description which states that arsenous iodide is inodorous; this sample had the odor of free iodine.

Product of Manufacturer C.—As the sample purchased from manufacturer C had been on our shelves for three years after the bottle was originally opened, and

apparently changed somewhat during this time, it is not particularly to the discredit of this manufacturer that the product failed to show proper quality. When originally opened three years before the present tests were made, this product contained a slight amount of free iodine. It is noteworthy that after three years the free iodine was no longer present; in fact this was the only sample of the four that contained no free iodine. A deficiency in iodide content, such as would be caused by the presence of some arsenic trioxide, would account for the high results in trivalent arsenic calculated as AsI_3.

Comments on U. S. P. Assay.—At this point we may consider the suitability of the U. S. P. assay for iodides as applied to arsenous iodide. Since the assay of Donovan's Solution includes an assay for trivalent arsenic, it would seem logical that the arsenous iodide used in its preparation should likewise be analyzed for trivalent arsenic. The percentage of arsenic is obviously of greater importance than the percentage of iodine, although both could be determined if this were deemed advisable. A Committee of the Philadelphia College of Pharmacy has already suggested (7) that the U. S. P. XI adopt an assay which determines the actual arsenic content of arsenous iodide. Likewise the Pharmaceutical Chemistry Sub-Committee has recommended (8) that the next edition of the British Pharmacopœia adopt an assay for arsenous iodide based on titration with $N/10$ iodine.

Another weakness in the present U. S. P. assay of arsenous iodide lies in the fact that the method does not distinguish between chlorides, bromides and iodides. Thus an arsenous iodide contaminated with chlorides or bromides would give misleading results in this assay. In this respect, it would be preferable to use the method of Szancer (9), which is not influenced by the presence of chlorides or bromides, since it is based on the liberation of iodine from iodides by means of nitrous acid. At this time, it is not definitely recommended that Szancer's method be adopted, as a preliminary trial of the method in this laboratory has given results which appear to be low.

CONCLUSIONS.

1. Arsenous iodide, U. S. P., as found on the market shows an undesirable variation in quality. The trivalent arsenic content, calculated as AsI_3, of four samples was 84.5%, 88.8%, 99.0% and 107.6%, respectively.

2. It would be desirable that the U. S. P. XI contain an assay of arsenous iodide for content of trivalent arsenic.

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FURTHER STUDIES CONCERNING THE U. S. P. X BIO-ASSAY STANDARD FOR ERGOT AND FLUIDEXTRACT OF ERGOT.*

BY MARVIN R. THOMPSON.[1]

INTRODUCTION.

The bio-assay requirements of the U. S. P., 10th Revision, for Ergot and Fluidextract of Ergot, involves the use of a "Standard Fluidextract of Ergot" as a standard for comparison of potency.

That a standard for comparison, in connection with the assay of ergot or its fluidextract, will be necessarily included in the 11th Revision of the U. S. P., is a foregone conclusion. In an earlier report of experimental studies on Ergot, the author (1) recommended that the Epinephrine-reversal Rabbit Uterus Method of Broom and Clark be adopted by the next Pharmacopœia in place of the now official Cock's Comb Method because of the greater accuracy and dependability afforded by the former. At approximately the same time, Smith (2) reported a colorimetric method which shows much promise for evaluating the specific alkaloidal content of ergot or its preparations. It is not the purpose of this report to discuss, or offer experimental data relating to methods. It is desired only to point out that there are at present but the three above-mentioned methods to be considered as possibilities by the U. S. P. Committee of Revision, and that each of these three methods, whether biological or colorimetric, necessitates the use of some standard of comparison. Further studies on methods will appear at a later date.

The method of preparation and nature of the current bio-assay standard for Ergot and Fluidextract of Ergot are specifically described in the U. S. P., (3) and, therefore, will not be repeated here. It is desired to point out, however, that in providing for this standard fluidextract, absolute stability was apparently assumed, since no provision was made for preparing successive lots which would be necessitated by possible deterioration. In a previous report (4) dealing with the adaptability of the official standard fluidextract for its intended purpose, experimental evidence was presented to show that the official standard was not absolutely stable, the experimentation being carried out upon preparations prepared and stored exactly as is the standard fluidextract, although direct observations had not been carried out upon the actual standard. For the purpose of determining whether or not such deterioration actually did occur in the standard fluidextract, the stability of all lots of this preparation distributed by the U. S. Department of Agriculture has been investigated, this data constituting the basis of this report.

Since the U. S. P. X became official, three different lots of the standard fluidextract have been prepared and distributed by the U. S. Department of Agriculture. The first, which was distributed from 1926 to 1928, was designated as "P.C. 635." When this lot was practically exhausted, a succeeding lot was pressed into use, and designated as "P.C. 636." This second lot constituted the official standard until February 1930. On approximately the latter date, lot "P.C. 636" was practically exhausted, and a third lot, designated as "P.C. 2160" was pressed into use and at the date of this writing, is still distributed as the official standard.

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* Scientific Section, A. PH. A., Miami meeting, 1931.

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In an earlier communication (4) it was pointed out that an ideal standard for the bio-assay of crude ergot, or its preparations, must meet two fundamental requirements. *First*, its pharmacodynamic activity must be representative of the clinically desirable activity of ergot; and, *second*, it must be constant in activity and composition. The author (4), as well as a number of other investigators, (5), (6), etc., have experimentally shown that the official standard fluidextract fully meets the first of the two fundamental requirements. On the other hand, the earlier work of the writer (4) strongly indicated that the second requirement, *i. e.*, that of stability and constant composition, was not adequately met by the present standard. Because of this apparent lack of stability in the official standard and the fact that ergotoxine ethanesulphonate and ergotamine tartrate proved to be distinctly superior to the official standard regarding constancy of composition and stability, as well as meeting the first requirement, it was recommended (1) that one of two alternatives be adopted in the next Pharmacopœia as follows: *First*, the use of one of the above-mentioned crystalline alkaloidal salts as the standard; or, *second*, the use of the U. S. P. X Standard Fluidextract, which had been accurately adjusted to a definite potency by comparison with one of the crystalline alkaloidal salts, and replacing each lot as soon as perceptible deterioration became evident through frequent check assays by comparison with the salt of ergotamine or ergotoxine.

EXPERIMENTAL.

To determine conclusively whether the U. S. P. X Standard did or did not lose potency with age, observations have been made directly upon all three lots which have been used, the potency being determined by comparison with the same lot of ergotamine tartrate employed as a standard in the earlier work. Since, in the experience of the author, the Epinephrine-Reversal Method of Broom and Clark has proven to be the most accurate and dependable of all methods yet proposed, this has been the method employed in this work. Because the greatest possible accuracy, well within 10%, was necessary, the greatest of care was exercised to select rabbit uteri of maximum sensitivity, and many determinations were carried out upon each lot of the Standard at various intervals.

Although U. S. P. X mentions nothing regarding the p_H of the Standard Fluidextract, it is now known that this factor plays a major part in the stability of any Fluidextract of Ergot. Accordingly, p_H determinations have been included in the study. For the purpose of conserving the relatively small amounts of the respective lots of the Standard Fluidextract available, the following set-up, using the electrode vessels recommended by Cullen and Biilmann for small quantities of solution, was employed:

Pt	:	KCl 0.09 M.	:	KCl	:	Ergot solution	:	Pt
	:	HCl 0.01 M.	:	Sat'd.	:		:	
	:	Quinhydrone	:		:	Quinhydrone	:	

The system was tested and checked very thoroughly before proceeding, using a standard HCl solution, the p_H of which was accurately known.

The results obtained, including the p_H of the three lots of the U. S. P. X Standard Fluidextract, and the potency in terms of Ergotamine base and Ergotamine

Tartrate at the beginning and end of an eighteen-month interval, are tabulated as follows:

Std. F. E. lot no.	Present age (approx.)	Potency, Feb. 1930 in Terms of Ergotamine tart.	Potency, Feb. 1930 in Terms of Ergotamine base.	After 18-Mo. Interval, Potency July 1931 in Terms of Ergotamine tart.	After 18-Mo. Interval, Potency July 1931 in Terms of Ergotamine base.	Per cent deterioration in 18 months.	p_H.
PC 635	5 years	0.235 mg./cc.	0.198 mg./cc.	0.210 mg./cc.	0.177 mg./cc.	10.6%	4.192
PC 636	3 years	0.290 mg./cc.	0.245 mg./cc.	0.275 mg./cc.	0.232 mg./cc.	5.7%	1.778
PC 2160	18 mos.	0.600 mg./cc.	0.507 mg./cc.	0.549 mg./cc.	0.464 mg./cc.	8.4%	1.809

DISCUSSION.

From the above experimental data, it becomes readily apparent that no lot of the U. S. P. Standard Fluidextract is absolutely stable. On the other hand, it is equally evident that this standard, during a period of eighteen months, deteriorates to so slight an extent as to be practically impossible of significant detection by the less accurate official Cock's Comb Method. By the Rabbit Uterus Method, every determination upon each lot clearly indicated significant, though slight, loss of potency, the tabulated results in every instance being the average of numerous determinations. Replacing each lot of the standard *after one year of service*, by another lot accurately adjusted to a definite potency in terms of ergotamine tartrate or ergotoxine ethanesulphonate, is apparently the only way by which a practically constant potency in the present standard could be insured.

The relationship of p_H to deterioration in the different lots presents an interesting subject. Lot "P.C. 635," whose p_H value is highest, shows, as might be expected, the greatest deterioration. "P.C. 636," however, whose p_H value was even slightly lower than "P.C. 2160," deteriorated in potency to possibly a lesser degree than did "P.C. 2160." It is true that the difference is very slight, but the difference was so consistent as to prove rather convincing. If the difference is actual, it is probably best explained by the hypothesis that "P.C. 636" aged longer than "P.C. 2160," and had attained a slightly greater degree of stability.

SUMMARY.

The stability of all lots of the U. S. P. X Standard Fluidextract of Ergot used up to the present time has been experimentally determined during a period of eighteen months. The p_H values of these three lots have likewise been determined and included in the results.

CONCLUSIONS.

1. The U. S. P. X Standard Fluidextract is shown to deteriorate to such an extent during eighteen months as to become perceptible to the sensitivity of the Isolated Rabbit Uterus Method of assay, although the deterioration during this period is less than could be significantly detected by the less accurate official Cock's Comb Method.

2. To insure a practically constant potency in the official standard, a new lot should be pressed into use at the end of every twelve months.

3. Either of the dry alkaloidal salts, Ergotamine Tartrate or Ergotoxine Ethanesulphonate, properly prepared and handled, would constitute a standard superior to the one at present official. Solutions should be freshly prepared for use.

My thanks are due to Mr. C. T. Ichniowski, of this Department, and to Prof. E. G. Vanden Bosche of the Department of Physical Chemistry, for the p_H determinations included in these studies.

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FLUIDEXTRACT OF ERGOT.*

BY L. W. ROWE AND WILBUR L. SCOVILLE.

The physiological activity of Ergot having been established as being mainly due to alkaloids which are insoluble in water and soluble in alcohol, and these alkaloids having been shown to be instable, being easily oxidized, it seems reasonable to judge that more stable preparations of Ergot may result from the use of more strongly alcoholic menstrua and the use of reducing agents. This paper is designed to throw light on the subject from this angle.

The large amount of chemical and pharmacological work that has been done on ergot during recent years has disclosed three facts of pharmaceutical interest. We now believe that the physiological action of ergot is due almost entirely to its alkaloids; that these alkaloids, when free, are soluble in alcohol but almost insoluble in water, and that the alkaloids are instable, probably becoming oxidized easily and thus losing their potency. These facts help to suggest some ways of producing more stable preparations of ergot.

The following experiments were made with this end in view, the fluidextract being selected for study.

A quantity of ground and defatted Spanish ergot sufficient for all the preparations made was used, the results thus being comparative and the method of treatment being as nearly the same as was practicable in all cases.

The fluidextracts were all made by the general process directed for Fluidextract of Ergot in the Pharmacopœia, namely, percolation of the drug, concentration of the weaker portion of percolate by distillation under reduced pressure and solution of the concentrate in the reserved portion. Heat was thus used in making all samples. The fluidextracts varied in the alcoholic strengths of the menstruum used, the amount and character of the acid employed and in a preliminary sterilization of the drug, in some cases. Ergot being the result of a fungus blight may well be expected to contain several enzymes, perhaps among them an oxydase or peroxydase and the effect of sterilizing these is a part of the attempt to secure stability. The sterilizing was accomplished by moistening the drug thoroughly with 95 per cent (or in two cases with 77 per cent) alcohol and heating the mixture under a reflux condenser, the hot alcohol thus acting as the sterilizing agent. The alcohol so used afterward became a part of the menstruum for extraction, thus avoiding drying and loss.

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* Scientific Section, A. PH. A., Miami meeting, 1931.

The ergot used assayed fully 125% by the Cock's Comb Method.

No. 1 Fluidextract was made according to the U. S. P. formula and directions. It showed a p_H of 5.0 and assayed 125% of standard when fresh and 80% to 100% after 6 months, showing a loss of about 25%.

No. 2 corresponds to No. 1 except that the ergot was first sterilized. To 250 Gm. of the ground drug was added 125 cc. of alcohol and the uniformly mixed product was placed in a 500-cc. flask, attached to a reflux condenser and the mixture heated on a steam-bath for 30 minutes. It was then allowed to cool, 120 cc. of water and 5 cc. of hydrochloric acid added and thoroughly mixed, the wet drug transferred to a percolator, allowed to macerate 48 hours then extracted in the usual way with dilute alcohol. This fluidextract showed a p_H of 4.16 and assayed when fresh 200%. After 6 months it assayed 20%—showing a loss in this time of 90%.

No. 3 was also made with diluted alcohol, the drug being first sterilized by heating 250 Gm. with 125 cc. of alcohol, then after cooling 119 cc. of water and 6 cc. of 50% hypophosphorous acid to form the first portion of menstruum. In this case an acid having deoxidizing properties is used in place of hydrochloric acid. The fluidextract showed a p_H of 4.15 and assayed 125% when fresh, and 125% after aging six months. No loss during this time.

No. 4 was made with 77% alcohol in place of diluted alcohol and the drug was sterilized by heating with a portion of the menstruum. Hydrochloric acid provided the acidity in this sample. This sample showed a p_H of 4.90 and assayed 65% when fresh, and 20% after 6 months, showing a loss of about 70% in this time.

No. 5 was also made with 77% alcohol in a corresponding manner to that of No. 4, but hypophosphorous acid was used in place of hydrochloric. The p_H was found to be 4.68 and it assayed when fresh 125%. After 6 months it assayed below 20%, showing a loss of about 90% in this time.

No. 6 was made with 87% alcohol and without sterilization. It was acidulated with hydrochloric acid. The p_H was found to be 3.84 and it assayed 80% when fresh and 60% after 6 months, showing a loss of 25% in this time.

No. 7 corresponded to No. 6, being made with 87% alcohol, without sterilization but with hypophosphorous acid in place of hydrochloric. It showed a p_H of 3.75 and assayed 150% when fresh, and 100% after 6 months, showing a loss of about 30% in this time.

SUMMARY.

No definite conclusions can be drawn from these experiments, but there are some rather significant results.

On the question of the effect of sterilization there are no definite indications. One sample which was made from the sterilized drug showed no loss in 6 months and another showed a 90% loss—the two extremes. The average loss on three samples made without sterilization is about 30% and on four with sterilization is about 60% or twice as great. It does not look as though sterilization is of any benefit in securing stability, but some further experiments will be worth while.

The action of a reducing agent is more definite. Since the acidity as shown by p_H values is approximately the same in all cases we can compare the effects of hydrochloric and hypophosphorous acids. Four experiments containing hydrochloric acid showed an average loss of about 50%, and two of these averaged 80% loss.

With hypophosphorous acid three experiments showed an average loss of 40%, and two of the three showed an average loss of 60%. The differences are not marked enough to be conclusive, but some other factors may be eliminated in further experiments to help in a decision.

One factor which does not appear in these experiments but which other experience has developed is the effect of heat and aeration in making the fluidextract. We have good evidence that heat and exposure sometimes injure this preparation quite seriously, a loss of 50% being known in one instance due to concentration by distillation under reduced pressure.

In the series of seven fluidextracts designated in the preceding paragraphs which were made individually, the conditions of distillation were not as uniform as they should be and some were exposed to more heat and aeration than others. Some of the erratic results may, perhaps, be due to such exposures. At any rate we feel that the next series should be based on fluidextracts made without heat, *i. e.*, by the fractional percolation method. We also hope to have some coöperative assistance in this work and an invitation is hereby extended to any who may be willing to join in an effort to secure a more stable preparation of ergot.

We desire to acknowledge with thanks the assistance of Mr. J. A Sultzaberger who made the p_H determinations on the preparations above quoted.

RESEARCH LABORATORIES OF PARKE, DAVIS & CO.,
DETROIT, MICH.,
June 1931.

THE ASSAY OF PEPSIN.*, **

BY H. L. GREENBERG.[1]

INTRODUCTION.

The official assay for the proteolytic power of pepsin is a modified and improved procedure based upon the original test for the activity of Saccharated Pepsin which was made official in the pharmacopœial revision of 1880. The inability of experienced analysts, unfamiliar with the official method of assay, to secure concordant and reliable results using the official assay procedure led to the following critical study in an attempt to develop a more satisfactory method of measuring the proteolytic activity of pepsin.

DEVELOPMENT OF ASSAY METHODS.

According to Waldschmidt (1) the oldest method of quantitatively estimating peptic strength is that of Bidder and Schmidt (2) which dates back to 1852. Since that time there have been many methods worked out. Some of the more important of these may be grouped as follows:

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* Scientific Section, A. PH. A., Miami meeting, 1931.

** From the laboratory of Glenn L. Jenkins, Professor of Pharmaceutical Chemistry, School of Pharmacy, University of Maryland. Abstracted from a thesis submitted to the Faculty of the Graduate School of the University of Maryland in partial fulfilment of the requirements for the degree of Master of Science.

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I. The enzyme is caused to act upon an insoluble protein and the rate at which the latter is digested into soluble products is observed. To this group belong the methods of Bidder and Schmidt (2), Brücke (3), Grünhagen (4), Grützner (5), Mett (6) and that of Witte (7).

II. The enzyme is made to act upon a solution or suspension of protein and the time required to carry the digestion to a definite state, or the amount of protein remaining undigested at the end of a definite time, is determined. The methods of Einhorn (8), Fuld and Levison (9), Gross (10), Jacoby-Selms (11), Rose (12), and that of Thomas and Weber (13), belong to this group.

III. The enzyme acts on the protein and the cleavage products are determined by chemical or physical methods. Abderhalden and Koelker (14), Allen (15), Foreman (16), Schütz (17), Sörenson (18), Van Slyke (19), Volhard (20), and Willstätter and Waldschmidt-Leitz (21), employed modifications of this procedure.

IV. The enzyme is allowed to act on a protein solution, and the progress of digestion is measured by change of electrical conductivity or change in turbidity or viscosity of the solution. To this group belong the methods of Hata (22), Liebermann (23), Northrop (24), and Spriggs (25).

EXPERIMENTAL.

The U. S. P. X Method.—A sample of commercial pepsin labeled "Pepsin U. S. P." was assayed repeatedly by the method of the U. S. P. X with results as follows:

Assay number.	Age of eggs in days.	Cc. of pepsin solution used.	Proteolytic strength.	Deposit of undissolved egg-albumen. (1)	(2)
1	Fresh	5		About 1.5 cc.	About 0.8 cc.
2	Fresh	6.5	1:2308 = 76.9%	Exactly 1 cc.	
3*	10	6.5		Exactly 1 cc.	About 1.3 cc.
4	10	6.5		About 0.9 cc.	About 0.8 cc.
5**	10	6.5		About 1.2 cc.	About 1.5 cc.
6	8	6.5		About 0.5 cc.	About 0.7 cc.
7***	8	6.0		About 0.8 cc.	About 0.6 cc.
8****	8	6.0		About 1.2 cc.	About 1.2 cc.
9	7	6.0		About 0.5 cc.	About 0.5 cc.
10*	10	5.8		About 1.2 cc.	About 1.2 cc.
11	10	5.8		About 0.9 cc.	About 0.7 cc.
12**	10	5.8		About 1.2 cc.	About 1.2 cc.
13****	5	5.7		About 1.3 cc.	About 0.9 cc.
14	5	5.7	1:2631 = 87.7%	About 1.1 cc.	About 0.9 cc.
15***	7	5.6		About 0.5 cc.	About 1.2 cc.
16	7	5.6		About 0.8 cc.	About 0.8 cc.
17	6	5.6		About 0.8 cc.	About 0.8 cc.
18	8	5.6		About 0.9 cc.	About 0.8 cc.
19	10	5.6		About 1.1 cc.	About 1.2 cc.
20	11	5.7		About 0.5 cc.	About 1.5 cc.
21	12	5.7		About 0.5 cc.	About 0.9 cc.
22***	5	5.5		About 0.9 cc.	About 0.9 cc.
23	6	5.5		Exactly 1 cc.	About 0.9 cc.
24	7	5.4	1:2778 = 92%	Exactly 1 cc.	Exactly 1 cc.
25	8	5.4		About 1.1 cc.	Exactly 1 cc.
26	7	5.3		About 1.3 cc.	About 1.2 cc.

27**	8	5.3	About 1.4 cc.	About 1.2 cc.
28	6	5.2	About 1.2 cc.	About 1.4 cc.
29	7	5.2	About 1.2 cc.	About 1.2 cc.
30	8	5.0	About 1.5 cc.	About 1.5 cc.
31	9	5.0	About 1.1 cc.	About 1.5 cc.

* One minute stirring. ** Unclean albumen. *** Too frequent agitation. **** Too infrequent or irregular agitation.

In the table, the standard pharmacopœial pepsin (1:3000) is taken as 100% pepsin. These results obtained with the same sample of pepsin assayed on different days indicate the effect of the age of the eggs and show the difference in proteolytic power obtained as the analyst became more experienced in the use of the method.

An extended study of the U. S. P. method of assay for pepsin revealed the following causes of inaccuracy:

1.—Variations in the age of the eggs used as a source of albumen. Graber (26) reported that albumen from eggs 5 to 7 days old was more easily digested than that of eggs of other ages.

2.—Variations in the moisture content of coagulated egg albumen. Vahlteich and Glover (27) have shown that egg albumen is not a suitable substrate since its moisture content is irregular.

3.—Variations in the particle size of the coagulated albumen, in the amount and vigor of stirring during the assay, and in the cleanliness of the albumen, all are conditions which may lead to erroneous results.

All of these variable factors combined with the necessity for the accurate maintenance of a constant temperature for $2^1/_2$ hours with agitation at 10-minute intervals make the present official assay procedure inaccurate and tedious.

Modified Sörensen Titration Method.—This method is based on the so-called formol titration procedure of Sörensen (18). It involves the proteolytic splitting of protein, blocking of the free amino groups with formaldehyde and titration of the liberated peptid carboxyl groups with standard alkali solution. The method is similar to that proposed by Willson (28) for the assay of pancreatin in that the proteolytic activity of the enzyme is given directly in terms of cc. of standard alkali.

The materials required are: (1) a 0.1% solution of pepsin freshly prepared by dissolving 0.1 Gm. of pepsin in sufficient distilled water to make 100 cc. immediately before using. (2) An approximately 0.1 per cent solution of casein (Hammersten's Casein as supplied by Merck) prepared as follows:

Place 1 Gm. of casein in a 1000-cc. volumetric flask, add 54 cc. of normal HCl and agitate the flask to distribute the casein and prevent lumping. Add 600 cc. of recently boiled distilled water and warm the mixture on a water-bath until the casein dissolves. After the casein has completely dissolved, add 300 cc. of recently boiled distilled water and adjust the solution to a p_H of 1.4. Add 3 cc. of chloroform as a preservative. The solution of casein is not suitable for use when a sediment has formed, usually after 2 or 3 weeks. Adjustment of the p_H may be performed easily and with sufficient accuracy by colormetric methods. (3) 100 cc. of a freshly prepared solution containing about 40 per cent of formaldehyde to which 1 cc. of a 1 per cent solution of phenolphthalein in 95 per cent alcohol has been added, and the whole rendered neutral by the addition of sodium hydroxide solution.

The assay is performed as follows:

Pipette 25 cc. of the casein solution into a 350-cc. Erlenmeyer flask. Stopper the flask and warm to 40° C. in a constant temperature bath. Add 25 cc. of the pepsin solution, stopper,

invert the flask once, and allow to digest at 40° C. in the constant temperature bath for 15 minutes. Remove the flask from the bath, add 25 cc. of the formaldehyde solution and rotate the contents of the flask for 2 minutes. Add 100 cc. of 0.02 *N* sodium hydroxide solution, mix well and titrate the excess alkali with 0.02 *N* hydrochloric acid. Conduct a blank test in the same manner. Subtract the number of cc. of 0.02 *N* HCl consumed in the actual test from the number of cc. used in the blank. The difference represents the number of cc. of 0.02 *N* alkali required to neutralize the acidity developed during proteolytic digestion. Divide this result by 3 and multiply by 100 to obtain the percentage strength of the pepsin; the figure 3 is the equivalent in terms of 0.02 *N* alkali of pepsin of 100 per cent activity. Since each 0.1 cc. of difference in the amount of alkali found in the blank test corresponds to 3.33 per cent of proteolytic activity, all volumetric measurements must be made with considerable accuracy.

Commercial samples of pepsin purchased from retail and wholesale drug houses and labeled "Pepsin U. S. P." were assayed in duplicate by the U. S. P. method and by the titration method with average results as follows:

Sample.	Proteolytic activity by U. S. P. X method.	Proteolytic activity by the titration method.
1.	150%	155%
2.	110%	116%
3.	115%	116%
4.	90%	92%
5.	150%	145%
6.	100%	102%

While the activity obtained by the U. S. P. method can hardly be measured except in terms of round numbers, the results indicate that the titration method is as accurate, if not more so, than that now official.

In order to determine the time of digestion necessary to develop maximum acidity by the titration method, samples of casein were digested with pepsin in the same manner as in the assay process for 15, 30, 60, 90 and 180 minutes, respectively. The results showed that there is no increase in acidity after fifteen minutes. Further tests showed that doubling of the amount of the substrate, casein, did not affect the results.

The effect produced by varying the amount of pepsin in the assay process was studied with results as follows:

Concentration of pepsin.	Acidity developed in 0.02 *N* alkali.
0.1 Gm. in 150 cc.	1.90
0.15 Gm. in 150 cc.	2.70
0.30 Gm. in 150 cc.	5.95
0.60 Gm. in 150 cc.	11.40

When the concentration of the pepsin solution is plotted against the acidity developed during the peptic digestion of casein, a straight line is formed showing that the acidity developed is directly proportional to the amount of pepsin used. It indicates also that the acidity developed is directly proportional to the proteolytic activity of the pepsin.

The Gross Method.—The Gross (10) Method is based upon digestion of casein with pepsin and determination of the total disappearance of the substrate by the addition of acetic acid or sodium acetate. Modifications of the method in which the amount of undigested casein are determined by turbidimetric methods have also been used. The method has been studied by Bümming (29), Adowa and Smorodinzew (30), Brandrup (31), and others with widely varying results.

In our study of this method, the end-point was found to be uncertain and difficult to determine. The results from a given assay could not be duplicated using the same materials. The method was, therefore, discarded as unreliable.

CONCLUSIONS.

1.—The assay process for pepsin official in the U. S. P. X is too long and tedious; the accuracy of the assay is influenced by numerous factors; and it requires that the analyst be experienced in order to secure concordant results.

2.—A titration method has been studied and found to be simpler, more rapid, and it is believed, more accurate than the U. S. P. method.

3.—The Gross Method has been found to be unreliable.

4.—It is recommended that the titration method be made official in the next revision of the U. S. P.

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"Pharmacy has never deviated from the ancient tradition of its purpose—to prepare and compound the medicaments which prevent, control, and cure disease and relieve suffering."—Dr. Howard W. Haggard.

ALKALOIDAL REAGENTS. I. INTRODUCTION.*

BY JAMES C. MUNCH, FRANK C. CROSSLEY AND WALTER H. HARTUNG.

In connection with chemical and pharmacological studies of a series of alkaloids and synthetic chemicals in these laboratories, it was necessary to develop characteristic qualitative tests by which each of the alkaloids could be positively identified, especially in cases where very small amounts of material are available. It is also desired to identify these alkaloids in the presence of other alkaloids, in complex mixtures and in urine or other body fluids.

Literature contains conflicting results of tests with common alkaloidal reagents. We investigated the behavior of some of these reagents with a number of simple benzene derivatives, to determine if any relationships of the chemical nature and relative positions of the substituent groups in the ring could be determined in this manner.

The investigation has been extended to include more complex benzene derivatives and analogous derivatives of naphthalene, pyridine, quinoline or other cyclic systems. In the light of the information obtained, a study is being made of the behavior of these reagents with the well-known alkaloids and synthetic chemicals. Studies are undertaken upon compounds of known composition, to correlate their reactions with definite chemical structure. If this phase of our studies proves satisfactory, we plan to attack those alkaloids whose structure is not known at present, with the hope of shedding some light upon their chemical constitution.

STANDARD PROCEDURE.

In order to obtain comparable results, a standard procedure was adopted and used in every test except where otherwise noted.

1. PREPARATION OF REAGENTS.

The standard textbooks and references in toxicology give more or less detailed instructions for the preparation of the alkaloidal test reagents (1, 3, 7). In attempting to use these directions, we have found that close attention to a number of details, such as purity of reagents, order of mixing, and accurate weighing of the constituents, is very important in order to reproduce reagents having uniform sensitivity in successive lots. The preparation of the reagents used in this investigation is given in detail. We used U. S. P. or chemically pure chemicals throughout. Pertinent remarks and comments based upon our experience in the preparation of these reagents follow:

(1) Sulphuric Acid: concentrated sulphuric acid, U. S. P., Sp. Gr. 1.83 at 25° (corresponding to 93% of H_2SO_4).

(2) Nitric Acid: Concentrated nitric acid, U. S. P., Sp. Gr. 1.40 at 25° C. (corresponding to 67% of HNO_3).

(3) Froehde's: Ammonium molybdate in concentrated sulphuric acid (1, 2, 3, 4).

Various ratios of molybdic acid or its salts to sulphuric acid are given in the literature. We have consistently dissolved 2 Gm. of ammonium molybdate

* Scientific Section, A. PH. A., Miami meeting, 1931.

in 100 cc. of concentrated sulphuric acid (Reagent 1). This solution was stored in a glass-stoppered bottle at room temperature, and opened from time to time for use. We have not found any change in sensitivity over a period of a month.

(4) Marquis: Formaldehyde in concentrated sulphuric acid (1, 4).

We added 1 cc. of U. S. P. Liquor Formaldehyde (containing not less than 37% of HCHO) to 100 cc. of concentrated sulphuric acid (Reagent 1). This was stored in a glass-stoppered bottle and opened from time to time for use.

(5) Mayer: Mercuric potassium iodide (1, 4).

We dissolved 1.358 Gm. of mercuric chloride in 60 cc. of distilled water, and separately dissolved 5 Gm. of potassium iodide in 10 cc. of distilled water. These two solutions were mixed, usually by adding the mercuric chloride solution to the potassium iodide solution, and the volume made up to 100 cc. Several lots of this reagent prepared for use at different times were found to vary in sensitivity. Upon further study, we learned that the ratio of mercuric chloride to potassium iodide must be carefully maintained. Any excess of mercuric chloride produces a precipitate. Any excess of potassium iodide reduces the sensitivity of the reagent. In order to produce a reagent of the maximum sensitivity, we carefully weighed out pure chemicals on an analytical balance. A few particles of powdered mercuric chloride are added one by one, until a precipitate is obtained which fails to dissolve on shaking. This precipitate is then dissolved by the addition of the smallest possible quantity of potassium iodide. We have not observed any change in the sensitivity of this solution over a period of a month.

(6) Dragendorff: Potassium bismuthous iodide (1, 4).

We dissolved 8 Gm. of bismuth subnitrate in 20 cc. of nitric acid, Sp. Gr. 1.18 (corresponding to 30% of HNO_3), and poured this solution gradually into a solution of 22.7 Gm. of potassium iodide in 16 cc. of water. This mixture was allowed to stand until no further precipitation of potassium nitrate occurred, then decanted and made up to a volume of 100 cc. with water. The solution was stored in the dark. This was used in this concentration, and not diluted for tests.

(7) Wagner's Reagent: Iodine potassium iodide.

Following the proportions outlined in U. S. P. X, we dissolved 2 Gm. of iodine and 6 Gm. of potassium iodide in distilled water and made up to a total volume of 100 cc.

(8) Picric Acid:

We dissolved 1 Gm. of picric acid in 100 cc. of hot distilled water and allowed to cool to room temperature; with our material, complete solution was obtained, and filtration was not necessary.

(9) Ferric Chloride:

We prepared a tenth-normal solution by dissolving 0.54 Gm. of anhydrous ferric chloride in distilled water and making up to a volume of 100 cc. In case

the hydrated form of ferric chloride is used, a quantity of 0.9 Gm. of the hexahydrate is required.

(10) Potassium Dichromate:

We prepared a tenth-normal solution by dissolving 1.47 Gm. of potassium dichromate in water, and making up to a total volume of 100 cc.

(11) Potassium Ferrocyanide:

We prepared a tenth-normal solution by dissolving 1.056 Gm. of the trihydrate in distilled water and making up to a total volume of 100 cc.

(12) Potassium Permanganate:

We prepared a tenth-normal solution by dissolving 1.58 Gm. of potassium permanganate in distilled water, and making up to a total volume of 100 cc.

(13) Chlorplatinic Acid:

We prepared a tenth-normal solution by dissolving 2.59 Gm. of the hexahydrate in distilled water and making up to a volume of 100 cc. Because of the great hygroscopicity, we found it advisable to weigh out approximately this quantity from a glass-stoppered weighing bottle, determining the exact quantity from the difference in weight before and after removal, and to dilute to a proportionate volume with distilled water.

(14) Schiebler: (Folin-Wu Uric Acid); Phosphotungstic acid (6).

We shook 10 Gm. of sodium tungstate with 75 cc. of distilled water until it was dissolved. Any undissolved residue was filtered off, and the solution boiled gently under a reflux condenser with 8 cc. of phosphoric acid U. S. P. (containing 85% of H_3PO_4), Sp. Gr. 1.71, for about 2 hours. The solution was then cooled and made up to a total volume of 100 cc.

(15) Uranium Acetate.

We prepared a tenth-normal solution by dissolving 2.12 Gm. of the dihydrate in water, and making up to a total volume of 100 cc.

(16) Mecke: Selenium dioxide (SeO_2) (1, 4).

We dissolved 0.5 Gm. of selenium dioxide in 100 cc. of concentrated sulphuric acid (Reagent No. 1).

(17) Millon: Mercurous nitrate (1).

We dissolved 25 Gm. of metallic mercury in 25 Gm. of nitric acid U. S. P., Sp. Gr. 1.40 (corresponding to 67% of HNO_3), (Reagent No. 2), with gentle warming until fumes were no longer produced. This solution was then cooled and 50 cc. of distilled water added. The solution was allowed to stand for several weeks before use, then decanted from the precipitate which had formed.

(18) Erdmann's Sulphuric-Nitric acid mixture (1).

In our early work we added a trace of nitric acid (Reagent No. 2) to concen-

trated sulphuric acid (Reagent No. 1). The results obtained correspond so closely with results following the use of the individual constituents that this mixture was discarded.

2. PREPARATION OF TEST SOLUTIONS.

The compounds to be tested were prepared as 100-millimolar (tenth molar) solutions in freshly distilled water. Saturated aqueous solutions of the less soluble compounds were made at room temperature. The hydrochloride salts of the amines were used. Tests were made immediately after the preparation of the solutions to avoid any possibility of chemical change on standing.

3. STANDARD METHOD OF MAKING TESTS.

Approximately one milliliter of the test solution was introduced into a (1 x 10 cm.) test-tube. The reagent was added one drop at a time, and the test-tube shaken after each addition. If no precipitate or color change was observed when approximately 1 ml. of the reagent had been added, a negative result was recorded. When a positive result was obtained, the 100-millimolar solution was successively diluted to 10, 5, 1, 0.5 and 0.01 millimolar solutions and tested in turn. The highest of these dilutions at which the reaction was observed is recorded in millimoles per liter. In cases of compounds not soluble to the extent of 100 millimoles per liter, only the results obtained with a saturated solution are recorded. No attempts were made to determine the millimolar concentration actually tested and no tests were made upon dilutions of this saturated solution.

In cases where a precipitate was obtained, one drop of solution and one drop of reagent were mixed on a glass slide and the precipitate was examined under the microscope after several minutes (7). The precipitate is reported as amorphous or crystalline. No attempt was made to classify the type of precipitate obtained.

Because of conflicting reports in the literature upon color reactions as a means of identification of alkaloids, this type of test has fallen into disrepute. However, our experience has shown the necessity for close attention to a large number of apparently unimportant details in the proper determination of color as well as precipitate responses to these reagents and it is our belief that consistent and concordant comparative results can be obtained by the use of a uniform technic. We have compared the shades of color produced with the color standards given in Mulliken, after we learned the desirability of adopting a uniform reference standard (8).

We determine the color by holding the test-tube against a white back ground, at arms length from the observer and at eye level, with a source of diffused sunlight directly in back of the observer. The color is matched as nearly as possible with those given in Mulliken's color standard and the color is recorded in terms of the color and shade or tint designated on the standard. Where the color in the test-tube comes between two colors or comes between two shades or tints, both are recorded, the nearest one being written first. For example:

Sheet C, between RO and O.
Sheet C, YO, between tint 1 and tint 2.

CONCLUSIONS.

1. Standard methods of preparation of alkaloidal reagents and test solutions, as well as a standard technic for testing color and precipitate development, is outlined.

2. The necessity of closely following this standard technic is emphasized.

3. By this procedure, definite and characteristic tests for the benzene compounds, synthetic chemicals and alkaloids are being developed.

4. The effect of place and position isomerism upon reactivity is also being followed.

5. It is hoped that this procedure will shed some light upon the chemical composition of alkaloids whose structure is not known at the present time.

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ABSTRACTS OF PAPERS READ BEFORE SCIENTIFIC SECTION A. PH. A.

Influence of the Alkaloidal Purification Procedure in the Assay of Alkaloidal Drugs, by Geo. E. Ewe.

Incomplete alkaloidal purification procedures in the assay of alkaloidal drugs may cause inaccurate results due to inclusion in the alkaloidal residue of titratable calcium, magnesium and ammonium compounds. Sodium Carbonate or Bicarbonate cannot be used to replace ammonia in an effort to eliminate the above-mentioned interfering substances as their low efficiency in liberating alkaloids from plant tissues. The U. S. P. alkaloidal purification process ("complete" procedure) essentially eliminates these interfering substances but even residues so purified may still retain traces of calcium and magnesium, although the proportion is not significant for ordinary assay purposes.

The Pharmacognosy, Chemistry and Pharmacology of Viburnum. III. Viburnum Opulus var. Americanum. Its History, Botany and Pharmacognosy, by H. W. Youngken.

The history of past investigations of the taxonomy, chemistry and uses of this plant and its medicinal bark. The results of new observations by the author on botanically authenticated entire shrubs of this variety of *Viburnum Opulus* and its bark are described under the following captions: (1) Description of entire plant, (2) Description of root bark, (3) Histology of the root at varying levels from the tip, (4) Powdered root bark, (5) Description of the stem bark, (6) Histology of the stem at varying levels from terminal bud to base, (7) Histology of the old stem bark, (8) Powdered stem bark. Distinctions are given between the American and European varieties of *Viburnum Opulus*.

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DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor will also undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

ADVERTISING AND SELLING PROBLEMS OF DRUG STORES.

Store Layout and Arrangement.

BY PAUL C. OLSEN.

The cellar steps of the Upham drug store are dark, steep and rickety. No one needs to recite this fact to Stephen Upham, the proprietor, or Tinius McFarland, his hard-working, unsmiling assistant. They are up and down them dozens—or is it hundreds of times a day.

Half way down the stairs there is low head room where a first floor joist projects far out into the passageway. Tinius is a dreamy sort of a soul and once a week or so he forgets to duck his head for this over-hanging joist, with the result that he nurses more than ever a grudge against those dark, steep, rickety cellar stairs which he has to traverse so many times a day.

Once, while in the cellar industriously arranging to siphon a soda-fountain syrup from a five-gallon barrel to a one-gallon jar, he had heard a customer nervously tapping the thin floor overhead. Hastily he started the siphon and rushed up the creaking stairs to greet the customer. Hardly had he finished service to this cantankerous customer than another and yet another customer were standing there waiting to be served. Before Tinius knew it, Stephen Upham was back in the store to relieve him for lunch. It was more than an hour later before the request of a customer for some odd bit of merchandise caused Stephen Upham to begin a grumbling, uncertain search in the dark, disordered cellar.

Even the murky glow cast by the two 25-watt cellar lamps which were snapped on and off many dozens of times every day revealed to Stephen Upham's horrified gaze the sticky viscous brown pool of the soda-fountain syrup which was spreading in an ever-widening spot around the overflowing gallon jar.

The lecture which Tinius McFarland received was a classic. Into it was poured all the fervor and anguish of Stephen Upham's loss of several days' soda fountain profits liberally interspersed with profane references which were relics of his youthful adventuring days in Alaska, California and the Far East. Through it all ran the symphony that drug store profits only come as a result of constant and successful watchfulness over many hundreds of different and seemingly unimportant activities.

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Drug store layout and arrangement is only one of several groups of important problems which a druggist, in order to make the most profit out of this store, has to meet constantly and successfully.

If Stephen Upham only could have heard and heeded the significant though petulant comments of many of his customers, what a vista of increased profit opportunities would have been unfolded before him. All were related to efficient store layout and arrangement.

"Yes, you might as well go to Upham's. I haven't time to drive down town and it's so much trouble to park there anyway. I do hope Upham's have it but if they do, it'll take them forever to find it. Remember the time we wanted ivy poison lotion the day we started on our trip. Old man Upham was positive he had it. Even offered to make up some while we waited. Then that young man he has there came in and he found a dozen bottles of it all ready put up and practically under Mr. Upham's nose.

"I do think it would have been a good thing if Mr. Upham had married. Maybe his wife would have made him a better housekeeper in his store. He's thoroughly dependable and reliable and you couldn't find a more obliging man, but that store of his is certainly the most disordered place you'd ever want to see."

What a lot of useless wasted steps were taken every day in this store. If the splendid stock of merchandise he really had there were only put in an order which would permit the customers and the store staff to know just what was for sale there, what pleasant things would have happened to Stephen Upham's profits!

Then young Tinius McFarland could have had a much needed increase in his salary, affording him the means and opportunity to attend a college of pharmacy and become, later, a registered pharmacist instead of merely holding an assistant pharmacist's certificate, won after years of hard and none too understanding labor.

An orderly arrangement of the merchandise stock in that store would have enabled Stephen Upham and his assistant to take care of an increased volume of sales in half the time that was now spent on waiting on customers. Customers would have been served far more promptly and pleasantly.

It's hard for a customer to be content who has to wait while you go clear to the shed in the rear of the store to draw a pint of turpentine from a slippery dirty tin and then, when that is all wrapped, to find that the customer also wants some nursing bottles, the reserve stock of which is located way up in the front end of the cellar under the soda fountain, where you always have to remember to duck your head to avoid banging it against the pipes. It's also hard for the sales person to keep the smiling interested countenance he is supposed to have when he has to do all these things and all the while the customer becoming more irritated with his doing them.

"Well," says old Stephen Upham, "what would I do with all the time I save by a more efficient layout of my stock and store. I suppose I would have time to read the New York papers in addition to that miserable 8-page morning sheet they publish here, but I can't say that is a prospect which excites me greatly. I like to be busy. It makes the time pass more quickly. Goodness knows we put in long enough hours here. We want to make them seem as short as possible."

Poor Stephen Upham! Too busy, he says, to change his window display more than once every six weeks or so. Right now, though the air outside is fragrant with

the odor of leaves being burned in piles gathered by industrious householders, Stephen Upham's side window invites passers-by still to stock up on "Vacation Needs" at his store.

Too busy, he says he is to write an advertisement every week for the space he contracted in a moment of optimism to use for a year in the much maligned *Morning Clarion*. The energetic advertising solicitor of the *Morning Clarion* had written the first four of Stephen Upham's newspaper advertisements, but despairing of getting further interest and coöperation in the way of information and ideas, he had given up with the result that the fourth advertisement, which first appeared in early June, saying that fountain pens and stationery were appropriate graduation gifts, still was making its weekly appearance in the *Morning Clarion*.

Two teething rings hung dejectedly from a display card fastened with a rubber band crookedly to the cash register. "They sell on sight," the teething ring salesman had said enthusiastically.

And they did, except the last two rings. There were little torn places on the card where the nervous fingers of Stephen Upham had removed a ring to sell to a hopeful mother. And there were little splotches of glue where mothers—or perhaps it was grandmothers or suffering neighbors—had taken the rings from the card with a brief, "I'll take this, too, Mr. Upham."

Unhappily though in those last two teething rings, alone now in the vast blank spaces of the 8-by 10-inch display card, were tied up whatever profits were to be made from the sale of the entire dozen.

Stephen Upham knew from long years of experience that those last two teething rings would be hard to sell in their present state of display. Tucked away in corners of the dirty, damp cellar were dozens of other forgotten display cards with the last one, two or three on the card unsold.

He had little time to think about these things—he and his assistant were so busy looking for merchandise his customers had asked for that there was practically no time to give thought to ways to increase his sales and profits by selling this left-over merchandise in which much of his profits were locked up.

Several things might have been done to correct the situation. They could have been done if he hadn't been so busy endlessly searching from one end of the store to the other for the merchandise which his customers wanted to buy. He could have ordered another card of teething rings. (The place to buy them was plainly printed on the back of the card.) He could have done this knowing that while many items of merchandise will sell readily if displayed in sufficient quantity, they will sell very slowly or not at all when not so shown. If he didn't want to buy any more of the teething rings, he could have combined the display of them with the left overs from other display cards and made an interesting sales compelling display from the combination.

These are things though that could have been done only if he and his assistant had had the time and energy.

Up near the front of the store, in the right-hand corner, stands the soda fountain—a six-foot affair, which Stephen Upham and his assistant, taking his cue from the proprietor, regard as a grim and unpleasant necessity in the modern drug store.

Dr. Oliver Hardy Reed was a good friend of both Upham and his assistant. In fact he and Upham had served together in one of the medical detachments in the

American war. Some of Dr. Reed's prescriptions did find their way into Upham's drug store. We wonder, though, if Dr. Reed was altogether happy at this occurrence.

Dr. Reed is human like the rest of us. On warm days he stopped his shiny blue coupé in front of the store and came in for root beer. Root beer in Upham's drug store was served not in the traditional stein but in the familiar six-ounce thin glass. Familiar, indeed, were these glasses. Usually the three glasses still remaining from the dozen Stephen Upham had grudgingly bought were standing in little moist pools on the fountain, with the dregs of previous drinks still in them.

Just what did run through Dr. Reed's mind, as he made his cheery call, "Steve, Steve, how about some root beer?" Steve would then appear in shirt sleeves from the prescription room.

"How are you, Ollie? Root beer—sure, right away.

By this time one of the three glasses had been retrieved from the fountain top and given a quick rinse in cold water. In a few seconds it was back on the top of the fountain filled just a little too full now with Dr. Reed's favorite beverage.

Did Dr. Reed wonder whether or not similar careless housekeeping took place in the prescription room which he did not often visit? Were prescription bottles thoroughly washed before they were used? Were they, too, just given a quick rinse or were they washed at all? Were the mortars and graduates sparklingly clean or did they get the desultory treatment which seemed characteristic of the fountain equipment?

Though Stephan Upham was busy he did realize that three six-ounce thin glasses were too small an equipment even for a fountain which did as little business as his. He must order some more. He must put them in the want book—if he could only find out what that boy did with the want book. He must remember to ask him.

But here's Mrs. Green—what'll she be wanting to-day. So this and other needs of the store were forgotten in the constant hurly-burly of waiting on customers, interspersed with the perennial comment, "I know we have some of that, madam. If you'll just wait a minute, I am sure I'll find it."

Maybe he did find it and maybe he didn't. In any case time was wasted. The customer became impatient and, if the search was unsuccessful, the sale and profit opportunity were lost.

The point of all this discussion, which I am sure experienced druggists will recognize, is that a store layout which permits customers to be waited on quickly and satisfactorily, and with a minimum of confusion, not only creates sales and profits and pleases customers, but it also greatly reduces the time the proprietor and his assistants have to spend in this part of their store activities. The result inevitably is, therefore, that the proprietor has additional time and energy left with which to plan for more sales and profits, arrange window and store displays, keep the store clean and in order, maintain stock and increase his professional and business knowledge.

Just what are the principles of the store layout and arrangement which make possible this exceedingly desirable end will be discussed in the next article in this series.

THE NATIONAL DRUG STORE SURVEY.*

BY WROE ALDERSON, DIRECTOR, NATIONAL DRUG STORE SURVEY.

The purpose of the Survey is explained; the results to be derived and the deductions will improve service, thereby increasing sales volume.

The druggist, like other retail merchants, is in business for the purpose of performing definite services for the consuming public and to receive adequate compensation for those services. The two most important functions of management in this connection are to find the people who desire these services from the druggist and to keep the cost of performing these services down to the lowest figure possible. These two functions are usually referred to as sales promotion and cost control. The National Drug Store Survey, it is believed, will offer the retail druggists of the country definite and practical aid in the performance of both these business functions.

Cost control must be based directly on cost finding. Very few merchants in any line to-day have an adequate knowledge of the costs involved in handling the various products they sell. Information coming out of the National Drug Store Survey will indicate the operating cost on each of the thousands of items handled by the fourteen drug stores which are being intensively surveyed. A great many steps are involved in arriving at this result, but all of them simply represent extensions of the bookkeeping which each druggist is now doing to arrive at sales and expense figures applicable to each commodity handled. At the end of the twelve-month period ending April 1, 1932, the following facts will be available for each of the thousands of items handled by the drug stores being studied in St. Louis:

Number of packages sold	Gross profit
Cost price per unit	Operating expense
Sales price per unit	Net profit
Total volume of sales	

Operating expenses will be shown on each commodity not only by total, but by several expense classifications that will indicate to the druggist what is wrong with the handling of that particular product. Other related items of information will be the number of purchase sources used, the frequency of purchase, merchandise turnover and number of price changes during the year.

To illustrate more concretely the type of information that will be produced, we may imagine the ratios that will be obtained on several hypothetical commodities. Suppose that one of the retail druggists studied obtains an average gross margin of 25% on sales for all merchandise handled. If we assume an operating cost of 24% on sales, this druggist would be making a net profit of 1% on his total sales volume. With nothing more than ratios for the business as a whole to guide him, the druggist might assume that these ratios applied to all classes of merchandise handled. As a matter of fact, we know in advance from previous studies in other retail lines that such will not be the case. We can predict right now that we will find some very favorable product which we may call Commodity A, on which operating cost will be much below the average for the business as a whole. Very possibly the merchant will have an unfriendly feeling toward this commodity because he is able to secure

* An address before Section on Commercial Interests, A. PH. A., Miami meeting, 1931.

only 15% gross profit. This commodity, however, because of rapid turnover and other favorable merchandising qualities, costs only 12% on sales to handle. On Commodity A, therefore, the druggist is making a profit of 3% net on sales, as against 1% net on sales for his business as a whole. We can also predict in advance that we will find another product which we may call Commodity B on which the reverse situation will obtain. The druggist may feel very well disposed toward this commodity because he secures from it a gross profit of 40% on sales. On this commodity, however, because of slow turnover and other unfavorable merchandising qualities, operating expenses are twice as high as on the average commodity, just as they were only half as great on Commodity A. With an operating cost of 42% on sales, this commodity would obviously be accruing a net loss of 2%. This type of result which often comes about through cost analysis, seems somewhat bewildering to the retail merchant when first presented. In the instance just stated, many retail merchants would maintain that a profit of 16% was made on Commodity B and that a loss of 9% was accrued on Commodity A. This faulty calculation comes about from applying average operating costs to all commodities, regardless of the variation in cost characteristics. Such calculations do not provide any means for management to take hold of merchandising problems, which calculations of the more scientific type which have been illustrated by the two examples, have been proved time after time to be directly effective in bringing about lower costs and higher net return for the business as a whole.

We expect to be able to make our cost findings available in a form that will apply to retail drug stores throughout the country. At the end of the Survey we will present to the retail druggists of the country a simple set of tables from which they can readily derive the cost of handling any type of product in their stores. In other words, we hope to do more than merely present to the retail druggist the picture of what happened to commodities in the fourteen stores studied in St. Louis. The tables of standard costs referred to will take account of differences in turnover, general level of operating costs and other factors which will vary between stores and between sections of the country.

The application of these cost figures to his own store is a good start for any druggist to make, but it is only a start. When he knows what it is costing him to handle commodities, he must next consider how he may reduce this cost where it is excessive. Various policies have been pursued by retail merchants in this regard. Some of them have been able to eliminate from stock items which do not return a satisfactory profit. Others have been able to bring the commodity into the profit-making group by improving its turnover, setting a price scale to encourage quantity purchase or by otherwise changing the way in which the commodity is handled. There are, of course, in every trade some products on which price competition has proceeded so far that it is almost impossible for the retailer to obtain an adequate margin. It is important in any case for him to know how much he is losing on such commodities so that the trade as a whole may coöperate toward the end that every commodity be eventually compelled to pay its own way in retail distribution.

This program of cost finding has for its ultimate purpose the elimination of the concept of general overhead and the allocation of all operating expenses to the functions and commodities which bring them about, the advantages of considering overhead in its subdivisions instead of as a single figure, can be readily illustrated in

the retail drug business. In the retail drug store, at least three kinds of overhead should be distinguished because the druggist is doing at least three distinct kinds of business. These three kinds of overhead have to do with his prescription business, the soda fountain and to general merchandising. The prescription department of many retail drug stores to-day presents a striking picture of over-capacity. Many stores are filling as few as 10 or 12 prescriptions a day, while one store has a minimum capacity of 40 prescriptions per day for each pharmacist employed. The prescription department has large requirements in space occupied and in inventory investment in relation to sales. A similar situation exists with regard to the soda fountain, although here it is complicated by the problem of slack seasons. Most druggists permit their fountain business to slump off sharply in the winter months and hence have an extra burden of overhead which must be carried by peak fountain sales during the summer. It is doubtful whether this is a necessary condition since druggists who have been willing to put aggressive merchandising effort behind their fountains have frequently discovered that the volume of winter business available is much greater than they had imagined. The most important fact, however, about the retail druggist's problem of divided overhead is that the three types of capacity are not interchangeable. It is also doubtful whether any of the three departments does very much to increase sales in the other departments. The drug store much more than some other types of retail establishments, is an institution in which each department must stand on its own feet and calls, therefore, for aggressive merchandising.

The National Drug Store Survey is concerning itself with the other phase of the druggist's problems, namely, that of sales promotion in a number of ways. Some of the phases of sales promotion which will be treated during the course of the Survey are,

Store arrangement
Window display
Selling methods
Service policies
Handling of special sales

Some of the material already obtained suggests that much information of value will be obtained on these points.

It is not likely that we will be able to set up a model drug store in St. Louis, as a model grocery store was set up in Louisville. Conditions affecting proper drug store arrangement vary too greatly. We will, however, present in our public report examples of good and bad arrangement illustrated by floor plans and photographs. A number of the questions now at issue with regard to store arrangement in the drug field will be treated. Among these are the proper location of the soda fountain, placing of telephone booths, the placing of departments with relation to each other, and the general question of open-display fixtures. We are also observing carefully the behavior of both customers and clerks within the drug store to determine how much this behavior is affected by the placement of fixtures.

On window display a similar background of facts is being collected on which to base any suggestions which may be made for modifying practice in this field. Very exhaustive traffic studies are being made for a full week in front of each of the stores in the study. The reaction of passers-by to the window is being carefully observed in each case. In addition, experiments will be conducted during the

Survey year in the changing of windows, as well as displays inside the store and observing the effect that these changes have on sales results.

There is little question that selling is not sufficiently aggressive in the average independent drug store. We are making thousands of observations of sales transactions in the stores under investigation. In these observations we are already able to detect many striking instances of good- and poor-selling effort. Many details which are likely to be overlooked seem to affect sales results. The character of sales suggestion used by the sales person and the manner in which the commodity is presented to the customer seem to be of great importance. In this field, as in that of window display, some experimental work will be undertaken, as well as merely recording current practice.

The service policies pursued by the stores studied is also being made a subject of investigation. Stores in the group vary from those which are of a strict cash and carry type, to those which do more than 50% of their volume on a credit and delivery basis. There are also stores in the Survey which perform many unusual services for their customers as a means of trade promotion.

Most of the stores in the Survey engage in special sales to some degree. The results obtained by this means vary greatly from store to store; some merchants list items for sale which are not in stock at the time of the sale. Others seem to have learned by experience just what items can profitably be exploited by this means in their neighborhoods. As a result of this phase of the work, it is hoped that some general facts may be presented as to just what items carried by drug stores are best adapted to sales promotion through the cut-price sales. These are only a few examples of the type of information on the sales promotion side of retail business which will come out of the Survey paralleling that other important body of information already referred to having to do with the problem of cost control.

THE STANDARDIZATION OF PHARMACIES FOR EXPERIENCE REQUIREMENTS UNDER STATE PHARMACY LAW.*

BY GEORGE C. SCHICKS.

The question of the standardization of pharmacies for experience requirements under state pharmacy law is one which has frequently come up for discussion. We are all probably in accord with the idea that there is a real need for adequate professional training of the pre-registered man. It would also be conceded that the student must in some way receive enough experience so that he is competent to safely compound and dispense prescriptions.

Just how this experience is to be gained is a problem which confronts both the colleges training future pharmacists and boards examining them. Any plan advanced must markedly improve apprentice experience conditions of to-day or there is no real reason for its existence. It must also be one that is workable and enforceable.

Boards of pharmacy contend that applicants appear before them for registration licenses lacking practical experience and skill in compounding prescriptions. Many drug store apprentices feel that their opportunities to gain professional ex-

* Section on Education and Legislation, A. PH. A.

perience are not adequate in the present-day drug stores. Drug store owners and managers complain that newly registered men lack experience and hence are not as valuable as they should be.

In considering the problem at hand, let us take first the viewpoints which may be assumed by the boards of pharmacy. Among them might be the objection that in certain types of stores so few prescriptions are compounded that it would be impossible for an apprentice to obtain any appreciable amount of professional experience. Commercialism in drug stores has advanced very rapidly during the past ten years. This does not mean, however, that all stores that have increased their service to the public by offering the sale of commodities in addition to the compounding of prescriptions have done so at the expense of the latter. It does mean, however, that in such stores there is an increasing number of duties of a non-professional nature which make such demands on the time of the apprentice that he is left a very limited time in which to acquire his professional experience. Then, too, it is sometimes said that the colleges do not give enough practical dispensing laboratory work. In some cases this objection may be well founded. I, however, will speak only for my own college which gives sixty-four hours of lecture and one hundred sixty hours of laboratory in dispensing pharmacy during the last two years of the three-year course. In the judgment of some this may or may not be adequate time, but I believe it compares favorably with the majority of the colleges. Unfortunately lack of time in which to collect the necessary data has prevented me from giving you a survey of the time devoted to dispensing pharmacy as given by the various colleges.

From the viewpoint of the drug store apprentice let us consider his problem. He feels the need of obtaining professional experience but scarcely knows where best to go for it. If he seeks employment in a small store where, let us say, one apprentice is employed, there is always routine work to be done. The business is small, the general store experience is varied and in most cases valuable, but the acquisition of professional experience must suffer for the prescription business is too small.

In a larger store doing from five to twenty-five prescriptions a day, the conditions from the standpoint of the apprentice become more nearly ideal. He has the same advantages of becoming acquainted with general store conditions as has the man in the smaller store, with the additional opportunity of both watching and participating in the compounding of a greater number of prescriptions. In a store doing a large commercial business as well as a good prescription business, apprentices are kept so busy manning their respective counters that the opportunity to gain experience in the prescription room is perhaps negligible.

Many apprentices do feel handicapped because of the lack of professional experience. I base this statement on the results of a questionnaire given to our sophomore and senior students, and I assume the interest in their profession in our student body at Rutgers is no different than the professional interest found in other colleges. The questionnaire pertained to the fourth year's work in the new four-year program. It will suffice to say that in the group of subjects which our students recommended for the additional year—the request heading the list was for more work in dispensing pharmacy. This I feel shows the need for more professional experience, inasmuch as our students are already receiving two hundred and twenty-

four hours of work dealing only with the compounding and dispensing of prescriptions.

From the viewpoint of the drug store owner there is still another angle to the problem. He will contend that he gives apprentices in his store as much opportunity as possible to obtain their professional experience. Here is a man in business. He has his business obligations and possibilities, his overhead and his own livelihood to consider. Is it fair to him to expect that he is going to consider the acquisition of professional experience of every apprentice he takes into his store before he does his own business interests? If it is the best business to put an apprentice in the prescription room to assist the registered man, that store owner will place him there. If it is to the pharmacist's interests to place the apprentice at the soda fountain or behind the toilet goods counter why shouldn't he do so? He is paying the apprentice for his services and it is only good business to place that apprentice where he is the most needed.

But so much for the need for professional experience. The need exists and my subject to-day is one of the solutions offered to overcome the need of such experience—namely, "The Standardization of Pharmacies for Experience Requirements under the State Pharmacy Law." The advocates of standardized pharmacies have in theory a plan which they believe will solve the problem. From a practical point of view, however, that theory appears difficult either to make workable or enforceable.

A pharmacy law demanding that the pharmacist permit the apprentice to obtain certain professional experience would be no assurance that the apprentice would really receive it. In these days of unscrupulous competition and high overhead, even though a pharmacist might want ever so much to give his apprentices every opportunity to obtain professional experience—how long could a store last whose owner did not think first of his business organization?

Neither would such a law be any definite assurance that the apprentice would receive the proper professional experience. With the great changes in present-day education, with the advantages of constant scientific research, pharmacists graduating from colleges to-day have had their scientific education so broadened that present-day course contents can scarcely be compared with those given but a very few years ago. Pharmacists who have been out of college for a considerable number of years or perhaps did not go to college, do not refresh themselves to such an extent that they are always in a position to give as much information as might satisfy the present inquiring apprentice. Not only that, but it is even difficult for men actually engaged in college work to keep abreast of the research being done by our leading institutions and pharmaceutical houses. A practicing pharmacist may know of such new preparations and developments but might be embarrassed by too many questions being asked him—especially when a control law might make a pharmacist feel that he is obligated to give information when asked for by the apprentice. An apprentice may also feel that he is entitled to ask more questions since the pharmacist is obliged under the law to give him certain instruction. It is not difficult to see that such conditions might not long be conducive to the best results.

It may be interesting to consider here how the colleges might become involved, even though they were not directly concerned with the operation of the

standardized pharmacies law. Suppose that an apprentice asked a pharmacist in charge of a standardized store, a question pertaining to the professional work being done. The pharmacist would feel obliged to make some sort of a reply. The reply might not agree with what the apprentice thought he was taught in college and in order to prove his point he takes the question back to the college. Even though the college might be ever so tactful in handling the situation, it would be difficult to know just how the apprentice would relay that information. It can be readily seen how an inexperienced apprentice could unconsciously misconstrue either the reply of the pharmacist or the reply of the college. In any event, it leaves open between the college and the pharmacist an excellent avenue for misunderstandng and antagonism.

Another hardship which such a law might work on the colleges is that they could easily be made a complaint tribunal in case the apprentice felt he was not receiving the proper training or didn't have competent supervision in the standardized store.

Another difficulty with the proposed law would be in the selection of stores to be standardized. With approximately 60,000 drug stores in the United States a classification of all stores would have to be made. Only stores meeting certain requirements could be considered for standardization. This would mean that many areas would be without a store in the class which could be standardized, which in turn would mean that men living in those areas would find it impossible to obtain their professional experience. In more thickly populated areas there would be more stores in the class meeting the requirements for standardization than perhaps the area could use and there would then be the problem of choosing specific stores among the qualifying group. Stores not meeting the standardization requirements or stores rejected for other reasons could, if they chose, make it rather unpleasant for the standardized store by hinting to the latter's customers and the public in general, "our store employs only registered pharmacists to compound prescriptions while the store down the street trains beginners who have not had enough experience to become registered." Is the layman going to consider the fact that the store down the street is a standardized store and therefore authorized by law to train apprentices? Is that man going to take into consideration that the beginners in the prescription room are always working under the supervision of a registered pharmacist? That means nothing to him. He reasons thus, "I will have no beginners experimenting with my prescriptions. I will go where I know registered pharmacists are employed."

Just such conditions exist to-day regarding other things so there is no reason to believe that those stores standardized under pharmacy law would not receive the blunt of much unfavorable criticism.

Let us assume for a few minutes that such a law were passed. If it were accepted by some states and not by others, which would undoubtedly be the case, a confusion in reciprocity between states would result. It would mean that those states having such a law would have a check made on how the individual applying for reciprocity obtained his experience. If he came from a state in which there was no standardized experience law it would probably be impossible for him to meet the requirements of the state which has such a law. It would seem that opportunities for reciprocity between states should be increased rather than retarded

and to inject such a measure would only tend to increase the difficulties of unification of state board reciprocal requirements.

Then again, if such a law were passed demanding that facilities to obtain professional experience be made available, it would not only increase the work of the boards of pharmacy but it would necessitate the organization of an adequate force of inspectors to see that the law was enforced. Such a force of inspectors could not be expected to render their services gratis, so there would result the big question of where money to pay for the enforcement of the law could be obtained. If the law depended on the good will of the pharmacist to enforce it with no paid adequate inspection, it would be too lax to be of any value.

The pharmacist has plenty to pay for now. If such a law were passed and the pharmacist were expected to supply the money to pay the inspectors, each drug store owner would have to be taxed, for the governing body under whose supervision it operated, could not select the group of stores to be standardized and then charge just those stores for the privilege of training apprentices. It would be a long drawn out proposition in most cases to obtain money from the state for the regulation of such a law. Nor would it be fair to charge the apprentice for such experience—instead he should receive payment for services rendered in the store.

Such a law as the one proposed would work a handicap on the apprentices. In scarcely populated areas a standardized drug store might be many miles from the home of a pre-registered man. The salary paid him would undoubtedly be insufficient for him to reside other than at home. In the more thickly populated areas in which large numbers of apprentices could expect to obtain professional experience, many may be unable to do so owing to the fact that the number of apprentices which could be trained in the standardized store would be very limited. In these same areas an excess of apprentices would tend to lower the wages.

Before closing my argument concerning the standardization of pharmacies for experience requirements under state pharmacy laws, I should like to bring to your attention what I feel is a very important differentiation in types of experience obtainable in a drug store.

It is a very important part of a pharmacist's training that he become thoroughly acquainted, so to speak, with the "atmosphere of the drug store." A model drug store in a college, while it may serve a very valuable purpose, will not replace by any means the actual experience to be gained in an operating store. The arrangement of the store, familiarity with patent medicines and toilet preparations, sick room supplies, drug sundries, soda fountain, cigar counter, the actual contacts with customers, encounters with salesmen, division of labor and invoicing cannot be satisfactorily duplicated anywhere but in the actual drug store. This orientation is one very vital factor determining the degree of usefulness that the newly registered man can be to his employer.

Although orientation is a vital factor in experience we must still be assured that an apprentice's professional experience is such that when he becomes registered he will be a safe compounder of prescriptions. The problem of insuring this professional skill is still a long way from being solved. I am reluctant to believe that standardization of pharmacies for experience requirement under state pharmacy laws would prove either effective or enforceable.

When I was asked to present this paper the scope of my subject provided

for no discussion other than that of standardized pharmacies, but until some other solution can be devised to assure adequate professional training the colleges might to some degree come to the aid of the situation. Although they can help but little in bringing the real "drug store atmosphere" to the college for the correct orientation of the student, there does seem to be an opportunity for them to give the student greater opportunities to acquire professional training.

If each college was to enlarge upon its present course content in dispensing pharmacy it would not involve any great expense to any one college—nor would it require any marked increase in the staff for instruction. The experience would be centralized in a place where the student is already obtaining information and the instruction would be authentic and complete. The busy druggist would not then be worried about a law requiring him to give instruction concerning much information which is not many times at his finger tips. It would seem that colleges with their equipment and teaching staff could help accomplish the desired end with a minimum of effort.

While I am not in any sense offering the college plan as a solution to the problem or a substitute for the standardization of pharmacies, still the colleges may be a valuable factor in making up the lack of professional experience which is apparently not available to the apprentice in many of our modern drug stores.

RUTGERS UNIVERSITY, COLLEGE OF PHARMACY,
NEWARK, N. J.

"Apotheke Klattau" dates back 150 or more years to ownership of a member of the Firbas family, of a long lineage of Austrian Apothecaries.—From a bulletin of Gesellschaft für Geschichte der Pharmazie—by Dr. Otto Zekert, Vienna.

ACCURACY.

No pharmacist need be told that accuracy is one of the important qualifications of a pharmacist; the public judges him accordingly—therefore, a sign, as well as a label, advertises the pharmacy. Avoid errors in spelling.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

"The teaching of pharmaceutical arithmetic received considerable attention at the last meeting of the Teachers' Conference at Miami and the following papers were presented. It is my understanding that more students fail the State Board Examinations in pharmaceutical arithmetic than in any other subject. Therefore, the teaching of this subject should receive careful consideration. It is hoped that these two papers will arouse discussion. Comments or papers on the subject will be gratefully received by the Editor of this Department.—C. B. JORDAN, *Editor*."

PHARMACEUTICAL ARITHMETIC METHODS USED IN LABORATORY TEACHING.

BY A. O. MICKELSEN.*

The application of theory is the utilization of knowledge derived from a theoretical training. A theoretical training in mathematics is not sufficient to qualify a pharmacy student for practical work behind a prescription counter; the better plan is to couple the theory with laboratory work in pharmacy. It is rare to receive a prescription not requiring the application of mathematics in its compounding. If the compounder has had laboratory mathematics, he does his work at the prescription desk, unconscious of the mathematics involved. There are numerous practical men who are failures so far as theoretical mathematics is concerned, but are safe and practical pharmacists due to their laboratory experience in handling weights and measures.

The importance of the laboratory mathematics cannot be overstressed. The writer need only name one incident to illustrate the value of laboratory mathematics; the case of a corporal at Leavenworth, Kansas, who attempted to weigh $^1/_{200}$th grain of atropine sulphate, resulting in the death of two children. This undoubtedly was not through lack of theoretical mathematics, but through lack of experience in attempting to weigh such a small quantity of a potent drug. The student should be taught to use tablets rather than attempting to weigh such small quantities of potent drugs. The laboratory experiment should be continued, however, by giving the freshman student some potent drug, as strychnine sulphate, requiring him to weigh $^1/_{40}$th grain, using a quantity of strychnine sulphate large enough to be weighed, one or two grains, and incorporating with some inert powder and coloring matter; mixing the powders until an even color results and reweighing a calculated portion of the powder containing $^1/_{40}$th grain of strychnine. Such experiments avoid accidents similar to that referred to.

A few examples for discussion should suffice as a general idea of this subject since time will not permit a detailed paper. Alligation is an important phase of mathematics and will serve as an example. Alligation can be effectively demonstrated in the freshman pharmacy laboratory work by the use of standard chemical solutions. To illustrate, the following problem is given:

In what proportion should three solutions containing 7%, 16% and 18% be

* Dean, School of Pharmacy, North Pacific College of Oregon.

mixed to obtain a resulting solution containing 11%. The answer: 12 parts of the 7% solution and 4 parts each of the 16% and 18%. Procedure: Label three bottles 7%, 16% and 18%, respectively. The 7% solution is a known hydrochloric acid solution containing a few drops of phenolphthalein indicator, leaving it a clear solution, titrated so that one and one-half cubic milliliters neutralizes one cubic milliliter of a known solution of sodium hydroxide. The solution of sodium hydroxide is placed in the bottles representing the 16% and 18% solutions. If the student's calculations are correct, and the solutions carefully measured, 12 parts of the hydrochloric acid will exactly neutralize 4 parts each of the sodium hydroxide and a pink solution results.

The freshman student is not familiar with volumetric chemistry and no explanation is necessary. The fact that if his work is accurate the solution turns pink, impresses the student with the principles of alligation, checks the accuracy of calculations and measuring solutions. The writer is aware of the fact that if a greater quantity of sodium hydroxide solution is used than is required, a pink solution will also result, but this can be detected by a greater intensity of color due to the hydroxyl-ion concentration. In spite of this defect this method of demonstrating alligation has proven very effective. Numerous problems can be demonstrated by the use of volumetric solutions and indicators prepared by upper classmen in the chemistry department. Various other experiments illustrating mathematics should be given in the freshman year, using Metric, Avoirdupois and Apothecaries' weights and measures.

For more advanced work, such as prescriptions, every prescription should involve a mathematical problem for the student. Illustrating, the following prescription is used:

Ammonium Chloride	℥ ii
Diluted Hydrocyanic Acid	♏ xxiv
Codeine Sulphate	gr. iii
Syrup of Wild Cherry	f℥ iii

The student should fill this prescription using the Metric weights; calculate the number of U. S. P. doses of the codeine sulphate; determine whether or not this prescription is within the exempt narcotic class, or if the container should bear a narcotic label. The student may also be asked to change the prescription to a greater or lesser quantity than the prescription calls for. The idea is to couple the prescription with mathematical problems and require the student to hand in his work in detail.

Mental calculation should be taught. The accomplishment of being able to calculate with the aid of pencil and paper is not sufficient for the busy practical pharmacist; the student should be taught mental calculation as well. For this work the writer projects numerous original prescriptions on a screen, calling on students for rapid oral calculations and reading, thus training in reading and rapid calculation.

In conclusion, the writer is not attempting to outline a complete course in laboratory mathematics, but is desirous of exchanging ideas in this important phase of pharmaceutical training and recommends that mathematics be stressed in the pharmacy laboratory work throughout the entire four years of training.

Our pharmacy textbooks offer a number of experiments that should not be overlooked and when the U. S. P. and N. F. are used, there are numerous ways of incorporating mathematics with the laboratory work without detracting from the phase of dispensing or compounding, yet making the experiment more practical.

PHARMACEUTICAL ARITHMETIC AS A SEPARATE COURSE.

BY RALPH L. CALVERT.*

A course in pharmacy includes many subjects which are more or less closely related to each other, and in most of these subjects a fundamental knowledge of ordinary arithmetical calculation is essential. Therefore, it would seem necessary for the pharmacy student to have had a thorough understanding of simple arithmetical processes in grammar and high school prior to his entrance in the pharmacy school.

The difficulty, which we as teachers find in the failure of some students—a group representing probably one-fourth of the class—to grasp the principles of pharmaceutical arithmetic, lies in the fact that they have not been properly trained in the grammar and high schools. The only way we can expect to make them understand their work in this subject is to place them in a separate class and present the material in a different way. Otherwise, the better students in the class become uneasy, bored, and their interest and enthusiasm soon begin to fade.

The writer has noticed over a period of ten years that those students who make poor grades in chemistry or physics also make poor grades in pharmaceutical arithmetic.[1] As a matter of fact all those subjects which require arithmetical procedure in one way or another invariably tabulate the same when comparisons are made.

We must realize that many of our students matriculate without any previous practical experience and that many of those who have had some experience in a drug store lack the kind of experience which was once received before the advent of the soda fountain, the jewelry, sporting goods or sundry departments.

We must also realize that the pharmacy student has more subjects to study in our colleges to-day than he had a few years ago and while the school hours are longer yet the relationship of the college to the drug store is not proportionately the same to-day as it was some years ago. Therefore, different teaching methods of approach and attack must be used if we expect the student to benefit by our enlarged and better course.

It would seem quite necessary that the pharmacy student should have at least one hour of instruction in pharmaceutical arithmetic each week during his entire freshman year, and at least one hour a week for one semester during his senior year. With the inauguration of the four-year course it seems the proper procedure would be to have one hour a week for the entire freshman year and the same for the senior year. Surely, if we expect our pharmacy graduates to be good pharmacists, the one thing in which they should be well grounded should be that of being able to make necessary calculations correctly and with dispatch.

* Assistant Professor of Theoretical Pharmacy, Philadelphia College of Pharmacy and Science.

[1] See reports of Fairchild Scholarship Committee.—E. G. E.

If the facts presented are true and if the hypotheses are highly probable, then how can we present pharmaceutical arithmetic in the best way if not as a separate subject? We teach physiology as a separate subject and then materia medica later as a separate subject. We teach botany first as a separate subject and then later pharmacognosy as a separate subject.

Pharmacognosy is no longer taught as secondary to materia medica and we would not think of teaching chemistry under the caption of pharmacy.

Pharmaceutical arithmetic is a subject in itself, the application of which is necessary in the study of many other subjects included in the course of Pharmacy. Not one of us would want to entrust the filling of our prescriptions to a student who had made a grade of "90" in pharmacy, but who only had a grade of "60" in arithmetic. Therefore it would seem that a thorough understanding of one is as important and necessary as the other.

Allegorical interpretation of the Art of the Apothecary, 1619, by Peter Candid, eminent artist of his period (1548–1626)—from Illustrated Kalender—Deutschen Apotheker, Verein.

Carl Wilhelm Scheele, Swedish Pharmacist, memorialized by his many important discoveries.

SERVICE, CONFIDENCE, INDUSTRY, OBSERVATION, PATIENCE, PERSEVERANCE MARKED THE LIFE OF CARL WILHELM SCHEELE.

The trust of Scheele's neighbors "was a sincere tribute to the pharmacist—for it was solely as a pharmacist that these people knew him. They did not recognize that he was a man destined to become a world figure in science. Nor was such fame sought by Carl Scheele; his life was devoted to pharmacy and service to his community.

"In his spare time, the moments when there were no prescriptions to fill, when there was no one waiting at the counter to seek his advice, and when the shop lights had been put out for the night, he worked to satisfy his own insatiable curiosity concerning the properties of the materials with which he dealt."—*From a radio address, October 11th, by Howard W. Haggard, M.D.*

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

President, A. L. I. Winne, Richmond, Va. *Treasurer*, J. W. Gayle, Frankfort, Ky. *Chairman of Executive Committee*, A. C. Taylor, Washington, D. C. *Secretary*, H. C. Christensen, 130 N. Wells St., Chicago, Ill.

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Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
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		Porto Rico	

STATE BOARD NEWS.

Arizona.—Lawrence Evans, Jr., of Globe, has been appointed as a member of the Board of Pharmacy by Governor George P. Hunt, to fill the unexpired term of Paul D. Stormont, which term expires March 31, 1935. Mr. Stormont recently resigned as he has accepted a traveling position which will not permit him to attend to his board duties.

The next Board meeting will be held November 17th, followed by examinations from the 18th to the 20th, inclusive.

Kansas.—An examination was held at Manhattan, on August 19th–20th; total number of candidates 49, those passing 22 (45%). A considerable number of candidates exempt from college are still taking examination in Kansas.

Kentucky.—Results of the July examination show 23 out of 65 candidates for Registered Pharmacist license as passing (65%), and 9 out of 16 candidates for assistant certificate (56%), making the grade.

Five applicants qualified for reciprocal registration, one from Colorado, two from Ohio, one from Illinois and one from Indiana.

An examination was held at Middlesboro on October 13th, results to be published in next issue of Department.

Maine.—Twenty-two candidates took the board of Pharmacy examination on August 12th, four of them being successful (19%). The low passing percentage is due to the fact that a great many non-graduates are taking the examination under the college exemption, the Maine prerequisite just having been passed in 1931.

Michigan.—The results of the recent examination show that out of sixty taking the examination for registered pharmacists, twenty-six were successful (43%). Out of thirty-three taking the examination for assistant pharmacist, eighteen were successful (55%).

As the last legislature passed a law doing away with registered assistant pharmacists' examinations in the future, hereafter Michigan will conduct no more examinations for that class of certificate.

Missouri.—T. F. Shuler, of Kansas City, has been appointed to succeed E. H. Riske, of Independence, who recently retired from the Board.

Secretary Christensen of the N. A. B. P., attended a conference with the deans of the Missouri colleges and the members of the Board of Pharmacy, held in St. Louis on September 27th.

The subject of discussion was Missouri's recent resignation from the N. A. B. P. as a result of the misunderstanding at the Miami convention. After a frank discussion and explanation of the differences, a motion by Messrs. Bender and Reuter to re-affiliate with the N. A. B. P. was unanimously adopted. We are, therefore, glad to announce that Missouri is again an active member state with reciprocity in force.

New Jersey.—The Board of Pharmacy held a practical examination on September 25th, at Trenton, for applicants who failed to pass the practical examination last March. Forty-five candidates presented themselves; the results will be announced later.

A working agreement has been reached with the State Department of Health for coöperative efforts in the matter of testing drugs and medicines purchased from pharmacists and general merchants. The State Department of Health operates under the Food and Drugs Act and the Board of Pharmacy operates under the Pharmacy Act. By a merger of activity along certain lines, greater protection for the public against the sale of adulterated medicines will be afforded.

New Mexico.—Statistics compiled on the May board examinations show a total of 58 candidates, with 38 passing (65%).

Reports of the examination held at Albuquerque on October 19th and 20th will be published later.

North Dakota.—The North Dakota Board of Pharmacy will meet at the college of pharmacy, Fargo, N. D., November 10th–11th, at which time examinations will be given applicants for the registered pharmacist and assistant pharmacist certificates. Applications and communications should be addressed to the North Dakota Board of Pharmacy, P. H. Costello, Secretary, Cooperstown, N. D.

Ohio.—The results of the June examination announced some time ago show 132 out of 163 candidates taking examination as passing (81%).

The highest grade made in the examination was 89.5% by Thomas E. Semon, graduate of Ohio Northern University college of pharmacy.

Two reciprocal licenses were granted, one applicant coming from Pennsylvania and the other from Tennessee. Results of the October examination in Columbus will be announced in the next issue.

Oregon.—An examination meeting was held on October 19th and 20th in the Auditorium Room of the Oregon Building, 5th and Oak Streets, Portland, Ore. Results will be announced later.

Pennsylvania.—The report of the June examinations of the Board of Pharmacy shows 160 out of 229 registered pharmacist candidates as passing (70%), and 88 out of 137 assistant candidates successful (64%).

The October examinations were held on the eighth to the tenth, inclusive, at the Pittsburgh and Philadelphia Colleges of Pharmacy; report later.

Virginia.—The Board of Pharmacy will meet in Richmond on November 10th and 11th, and conduct examinations on those dates at the Medical College of Virginia. Address communications to A. L. I. Winne, Secretary, State Office Bldg., Richmond, Va.

VISITORS.

The N. A. B. P. central office in Chicago was honored with visits on October 3rd from the following board members and guests who were returning from the N. A. R. D. convention in Detroit: Arthur D. Baker, secretary of the Colorado Board, accompanied by Julius F. Ernest well-known Denver pharmacist and Colorado delegate to the N. A. R. D.; Rowland Jones, secretary of the South Dakota Board; Frank Ward, former secretary of the Oregon Board; and Messrs. Jelinek and Dargavel of the Minnesota Board. Secretary Dargavel was elected president of the N. A. R. D. at the Detroit convention, and the N. A. B. P. extends congratulations on this well-deserved honor.

PERSONAL.

Treasurer J. W. Gayle returned home from St. Joseph's Infirmary at Louisville the first of October after an eye operation. The doctor reports the operation successful, and Mr. Gayle is gradually regaining sight in this eye, which is indeed good news as the N. A. B. P. highly esteems its treasurer.

THE ROCKEFELLER HEALTH SCHOOL IN JAPAN.

The Rockefeller Foundation will donate 4,000,000 yen to the Japanese School of Public Health. The curriculum of the school is to comprise the matters of public health and health administration, and the period of instruction is to be two years. Applicants for the school shall be those wishing to become health officials in the National and local governments and shall be the graduates of the training school for such officials.

According to the *Japanese Retail Druggist*, "Japan's interests will be represented by Mr. Akagi, head of the Health Bureau of the Home Office, in dealing with the Rockefeller Foundation. The relations of pharmacy to the proposed school of public health is explained as follows by an official of the health bureau:

"1. When the training of health officials is commenced, researches into pharmaceutical problems will be also necessary, but there is no new organ as there is an institution in the Tokyo Municipal Hygienic Laboratory.

"2. There is no need of admitting the graduates of accredited colleges of pharmacy as in the case of those of medical colleges."

This foregoing opinion is opposed by those who believe that pharmacy should be given the same opportunity and standing with medicine and the period of training should be the same in each case. They also say that the existence of the Tokyo Municipal Hygienic Laboratory should have no connection with this matter.

The following views may be said to be a compromise between the foregoing two opposite opinions:

"The Rockefeller Foundation does not consider any need of a pharmaceutical department in the proposed school. Examinations also have only little to do with pharmaceutical problems. There will be a duplication if an institution similar to the Hygienic Laboratory is established within that school. We want to make the proposed school an international institution of great reputation, and even the Department of Finance has consented to an appropriation of 200,000 yen. It will be well for all concerned to be magnanimous in dealing with the problems that may arise in connection with the establishment of the school."

The Apotheke at Klattau, Austria, was preceded by alchemists who carried on their experiments in a hidden basement—see picture on left. The picture on the right shows an old San Antonio, Texas, drug store owned by the late Adolph Dreiss.

PHARMACY AND MEDICINE IN ANCIENT EGYPT.*

BY L. E. WARREN.

The civilization of ancient Egypt had its beginnings in an indeterminately remote past. There is evidence that the Nile Valley was inhabited by man in paleolithic times. Northeastern Africa was once a wooded, well-watered country inhabited by numerous hunters and myriads of game animals. The desiccation of the country drove the hunters and the animals alike into the river valley. These hunters have left vast quantities of crude flint implements in the desert bordering the Nile, but they were not the ancestors of the ancient Egyptians. It is believed that the Egyptians originally came from south central Asia and that they migrated across the Isthmus of Suez into the Nile valley, but their exact origin is unknown.

From 15,000 to 25,000 years ago southern and western Europe was peopled by an intelligent white race which modern archeologists have called the "Cro-Magnon." This race is believed to have migrated into Europe from Asia at the close of the 4th glaciation and to have driven out or extirpated the Neanderthal race which had occupied Europe for many thousands of years. Various subdivisions of the Cro-Magnon race in order of time were the Aurignacians, Solutreans and Magdalenians. The Magdalenians were great hunters.[1] They bridled the horse, hunted the mammoth and woolly rhinoceros, made excellent line drawings on horn, ivory and stone and executed wonderful polychrome paintings of the bison, mammoth, stag and other contemporaneous animals on the walls of their caverns. The Magdalenians were followed by, or were merged into the Azilians, although there is evidence that they still survive in a few districts in southern France. Anthropologists have never been able to bridge the gap between Magdalenian man and the ancient Egyptians. We know that the microlithic flints which appeared in late Magdalenian times in Europe are similar to those used as arrow points in pre-dynastic Egypt,[2] and that there is other evidence to indicate that the Magdalenians were nearer to the ancient Egyptians in culture than, perhaps, any other race of prehistoric man. Petrie[2] places the Magdalenian flints of Egypt as from 6000 to 9000 B.C.

In order to understand the progress that the Egyptians had made in pharmacy and medicine, it is necessary to know something of the history of this wonderful people and to survey their knowledge of such of the arts and sciences as they had acquired. Ancient Egypt (as now) consisted of a strip of land bordering the Nile from 1 to 20 miles wide and about 750 miles long. It was primarily an agricultural country and then (as now) it depended upon the annual inundation of the river and upon seasonal irrigation for its crops.

The development of Egypt is divided into four principal periods, namely: The Pre-Dynastic, the Old Kingdom, the Middle Kingdom and the Empire. The last three are included in the more or less artificial classification known as "Dynasties" or families of kings. The Pre-Dynastic period was preceded by long ages of archaic civilization, during which the tribes gradually coalesced into two kingdoms, an upper and lower Egypt (the two lands).

We know almost nothing of archaic Egyptian medicine. Some of the corpses of that age have been preserved by desiccation in the hot sands. From these we know that circumcision was practiced.[3] Some of the archaic skeletons show satisfactory healing of bones that had been broken, indicating that some form of surgery was practiced in that far remote time. The men had high, rounded foreheads[3] and wore pointed beards. The women had long, wavy, dark brown hair in which they wore combs of carved ivory. They tatooed their bodies with zigzag designs[4] and painted the face and eyebrows with green paint which they made by grinding malachite on palettes of slate. This is believed to be the earliest known use of cosmetics. The people made finely-shaped pottery ornamented with curious designs and crude drawings.

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* Presented before General Session, A. PH. A., Miami, Fla.

[1] Garrison, "An Introduction to the History of Medicine," 3rd Edition (1922), 47.

[2] Petrie, "A History of Egypt," Vol. 1.

[3] G. Elliot Smith, *Brit. Med. J.*, I (1908), 732; "The Ancient Egyptians and the Origin of Civilization," 1923.

[4] Dr. G. Elliot Smith questions whether tatooing was practiced in this age.

PRE-DYNASTIC AGE.

Historians fix the beginning of the Pre-Dynastic age as 4241 years B.C., the date of the establishment of the calendar of 365 days. This calendar contained twelve months of thirty days each with five feast days at the close of the year. It has been in continuous use for over 6000 years and has come down to us intact except for some minor disfigurements and corrections in Roman times. Comparatively little is known of the Pre-Dynastic period.[1] It undoubtedly had a written language but its writings have been lost. Presumably it had temples but they have disappeared. It has left a few surviving monuments, some statuettes and several crude paintings on the walls of its tombs. The art of mummification was unknown. The contents of the graves show that the people of that age knew the art of pottery making, used stone and copper implements, were religious and believed in the resurrection of the body and probably in the immortality of the soul.

The earliest known evidence of pharmaceutical art is found in the ointment jars from the pre-dynastic graves, but we know almost nothing of the drugs or medicines of that age. However, it is inconceivable that a race which had advanced so far from barbarism as to have established a working calendar with less than six hours of annual error, had not collected some knowledge concerning the medicinal uses of plants and minerals about them.

DYNASTIC AGE.

The Dynastic Age began with the accession of Menes, the first king of United Egypt, about 3400 B.C. (Breasted) or 4777 B.C. (Petrie).[2] Manetho, Egyptian priest and historian, relates that King Athothis (Teta) the successor of Menes, wrote treatises on anatomy and surgery and that he performed surgical operations by means of flint flakes. Doubtless these operations were of a minor nature, such as lancing felons, opening abscesses and the like. Manetho's story, however, indicates that considerable surgical knowledge must have been accumulated during the preceding ages.

Some of the earliest known medical works date from Zoser's reign in the third dynasty, 2980 B.C. According to Breasted,[3] Zoser's chief counselor was Imhotep, a celebrated architect and physician. This great seer collected much current knowledge of magic and medicine into Proverbs which were still quoted centuries later. Breasted states that "two thousand five hundred years after his death he had become a god of medicine, in whom the Greeks, who called him Imouthes, recognized their own Asklepios." We know him as Aesculapius. Accoring to Manetho this great physician was a king, Tosorthros, the second in the Third Dynasty.

THE OLD KINGDOM.

With the advent of the Fourth Dynasty the history of Egypt begins to emerge from the mists of myth and tradition into the light of more certain knowledge. This was the beginning of the Old Kingdom. This period lasted for nearly a thousand years and was in some respects more brilliant than any succeeding age. Our knowledge of the Old Kingdom comes principally from its tombs and monuments as most of its papyri have long since crumbled to dust.

The Egyptian was a firm believer in the resurrection of the physical body, and it is to the powerful influence of this concept on his mind that our knowledge of his daily life is largely due. The Egyptian spent much of his time and substance in preparing a tomb for his existence in the

[1] When Herodotus visited Egypt twenty-four centuries ago, he was shown a row of 341 wooden statues which the Egyptian priests claimed were representations of the succession of priests who had ruled the religious affairs of Egypt since records had been kept. Herodotus does not give the names of this priestly succession, but he calculates that if the word of the priests be true, historical Egypt must have extended back at least 11,300 years before his visit. Whether or not the story of Herodotus be accepted, we know from other evidence that the Archaic and Pre-Dynastic periods of Egypt are very, very old.

[2] There is a great difference between the ages ascribed to the Egyptian Dynasties by the two principal schools of Egyptology. The British school, as represented by Sir W. M. Flinders Petrie, places the beginning of the Dynastic age as about 4777 B.C. The Berlin school, whose most illustrious follower in this country is Dr. J. H. Breasted, dates this event at about 3400 B.C. Unless otherwise stated the dates in this paper follow the more conservative school.

[3] History of Egypt from the earliest times to the Persian Conquest; 1928 printing.

hereafter. He provided food, drink, raiment, medicines, cosmetics, weapons, boats, chariots, jewels and other articles of personal adornment; he ornamented his sepulcher with inscriptions, paintings, statues and rock carvings in great variety, depicting the daily life of his times. These mortuary offerings were designed for the entertainment of the departed in the future life. The pictures include hunting, planting and sowing, winnowing grain, tending flocks and herds, collecting tribute, dancing, making military campaigns, building boats, smelting ore (by the use of the furnace and blow pipe), weighing gold and malachite, etc. An example of the towering insistence of this belief in resurrection is recorded by Dr. G. Elliot Smith.[1] He states that when he unwrapped the mummy of King Siptah of the Nineteenth Dynasty he found a set of splints applied to the right forearm. The limb had been broken by grave plunderers long after the king's death and had been set by priests of the Twenty-first Dynasty, who had re-wrapped the body in preparation for the resurrection.

Medicine in Egypt originated with the priesthood and remained in its hands. According to Clement of Alexandria, only the less important classes of priests became physicians, but this is not in accord with other evidence for we know that some of the court physicians were very highly honored and respected by their Pharaohs. The temples were the hospitals and some of the rooms were reserved for laboratories, where the incense and the drugs were prepared. These are the earliest known pharmacies.

The priest-physicians began very early to keep the records of their cases on papyri in the temples so that in the course of time a great deal of information concerning the diagnosis of disease was collected. Disease was believed to be due to the displeasure of the gods or to hostile spirits. The physician depended fully as much upon magic for curing his patient as upon the effects of the drugs prescribed. The administration of a dose of medicine was always preceded by reciting an incantation, or prayer to the gods. This magic formula was to be repeated not only by the physician who prescribed the remedy but by the patient. The physician was forbidden to change the treatment from that prescribed in the "writings" or sacred medical works of the time. (According to some writers, he was permitted to change or modify the treatment after the fourth day.) This prescription resulted in almost complete stagnation of medical progress from the time of the Old Kingdom on. Searching for truth by the experimental method was never encouraged by the Egyptian priesthood. In later times the physicians were all specialists. Herodotus relates that:

Small gold cap jar, from tomb of Khasekhemin, for cosmetics; alabaster unguent jar V–VII Dynasty; vase from Dendereh for oils or salves used in ceremonies for the dead; small cosmetic jar, same source as preceding.

> Each physician is a physician of one disease and of no more; and the whole country is full of physicians for some profess themselves to be physicians of the eyes, others of the head, others of the teeth, others of the affections of the stomach, and others of the more obscure ailments.

THE PAPYRUS EBERS.

Although several medical papyri are known we are more greatly indebted to the Ebers papyrus for our knowledge of Egyptian pharmacy and medicine than to any other single source. This important document was purchased by Georg Ebers, a German Egyptologist, in 1872 from an Arab at Luxor, who claimed that it had been found 14 years previously between the knees of a mummy in a Theban cemetery. The finder having died, the identity of the mummy could not be determined. The Ebers papyrus dates from 1552 B.C. It is written in the hieratic

[1] G. Elliot Smith, *Brit. Med. J.*, I (1908), 732; "The Ancient Egyptians and the Origin of Civilization," 1923.

(priestly) script of the day on the finest quality of yellow-brown papyrus. The document is about 30 centimeters wide and the written portion 20.23 meters in length. The entire text was written by the same calligrapher but a part of the pagination, the corrections and the marginal notes, are in different hands.

Ebers[1] believed that this papyrus was one of the forty-two lost sacred books of Thoth (Hermetic Books) which were described by Clement of Alexandria as epitomizing the wisdom of the Egyptians. Eight[2] of these books were supposed to have been on medical subjects. Ebers' assumption is now known to be incorrect. Certain portions of the text of the Papyrus contain idiomatic expressions not belonging to the age in which the manuscript was prepared. This is believed to indicate that the text is of far greater age than the time of this copy. It is probable that most of the text belongs to the Twelfth or Thirteenth Dynasties but that certain parts go back as far as the First Dynasty. The text and most of the prescriptions are written in black except that the headings, rubrics and quantities are in red.[3] The Ebers Papyrus is an encyclopedia of the medical knowledge of the time. It describes most of the diseases of modern times with sufficient accuracy for recognition by modern diagnosticians, and many ailments that cannot be identified. It also prescribes the incantations and remedies to be employed in the treatment of the disease. The Papyrus contains 811 prescriptions and more than 700 drugs are mentioned. However, some of the drugs are disguised under fanciful names and many cannot now be identified.

The list of substances used as Egyptian drugs which follows has been compiled from various sources but chiefly from the Papyrus Ebers. Only those substances are included the names of which are translatable.

Absinthe
Acacia
Alabaster (ground)
Aloes
Anise
Balsam
Beans
Beer (bitter and sweet)
Beer Froth
Bees Wax
Belladonna
Blood of various animals
Calamus
Calcium Carbonate
Caraway
Cassia
Castor Oil
Copper Shavings
Coriander
Crocus
Cucumber
Cumin
Cypress Berries
Cypress Wood
Date Blossoms
Dates
Elderberries
Endive seed
Excrements of the Gods, man and numerous animals.
Fat of various animals
Fennel
Fenugreek
Figs
Flaxseed
Frankincense
Garlic
Gentian
Goose Grease
Grapes
Hartshorn
Haematite
Henbane
Honey
Iron
Ivy (Plant of Osiris)
Juniper Berries
Lead
Lettuce
Lotus Flowers
Magnesia
Malachite
Mastic
Myrrh
Nasturtium
Oil of Cedarwood
Olive Oil
Onion
Onion Sap
Opium
Oxgall
Palm fibers
Peppermint
Pomegranate Bark
Poppy Heads
Poppy Seed
Potassium Nitrate
Resins (of various kinds)
Saffron (Blood of Thoth)
Sea Salt
Sebestens
Sodium Bicarbonate
Sodium Carbonate
Sodium Chloride
Squill (Eye of Typhoon)
Styrax
Sulphur
Sycamore Wood
Turpentine
Verdigris
Vermilion
Vervain (Tears of Isis)
Vinegar
Watermelon
Wheat
Wine (from fermented barley)
Wormwood (Absinthe)
Yeast

At least 18 of the drugs employed in the Ebers Papyrus are described in the U. S. P. X. These are acacia, aloe, belladonna, hyoscyamus, flaxseed, myrrh, opium, caraway, gentian, senna, peppermint, castor oil, honey, pomegranate, colchicum, squill, sulphur, sodium chloride and sodium bicarbonate. Iron and copper compounds were also prescribed.

The following prescription was probably effective even if not an example of elegant pharmacy:

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[1] *An Egyptian Princess.* Preface to 4th German edition.

[2] Some writers state that there were but six books devoted to medicine.

[3] The red ink of this Papyrus has been found to contain red lead.

Remedy to stop the crying of a child.

Pods-of-the-Poppy-plant (Opium)
Fly-dirt-which-is-on-the-wall
Make into one, strain and take for four days.
It acts at once!

It is often stated that constipation is essentially a modern complaint—a result of the use of too concentrated food and to other errors in diet. No one who studies the Ebers Papyrus can believe that constipation is a recently acquired evil. On page after page of this work there is formula after formula for the treatment of this aggravating condition. Castor oil enters into most of the formulas. In one it is the only constituent. It is claimed for one of these formulas that it is not only a purgative but that it drives out all the diseases in the body. This wonderful panacea consisted of half an onion mixed in beer froth. This is described as a "delightful remedy against death."

One of the remedies for indigestion is as follows:

A Hog's Tooth
Crush to powder, put inside four sugar-cakes, and eat for four days.

In modern times we use extracts from the lining of the hog's stomach or from his pancreas in the hope of correcting imperfect digestion.

Seventy-four prescriptions in the Papyrus are for hair washes, hair dyes, hair oils and depilatories. A face cream of the day consisted of bullock's bile and ostrich egg beaten up with fresh milk.

The first prescription for a hair grower of which we have record was made for Queen Ses, the mother of King Teta (3400 B.C.). It consisted of

Toes-of-a-Dog
Refuse of Dates
Hoof-of-an-Ass

This hoary old formula of 5 milleniums was about as rational and probably just as efficacious as some of the concoctions which were advertised as hair restorers only two decades ago in the United States.

Another for the growth of the hair on a head which is becoming bald.

Fat-of-the-Lion
Fat-of-the-Hippopotamus
Fat-of-the-Crocodile
Fat-of-the-Cat
Fat-of-the-Serpent
Fat-of-the-Egyptian-Goat

"Make into one and rub the head of the Bald One therewith."

Dawson,[1] believes that the magician who wrote this prescription was fully aware of the fact that the patient probably could not obtain all of these fats on the spur of the moment but would be obliged to purchase them from his healer. He would receive them each in its respective gallipot properly labeled but the commentator ventures the opinion that each and all would contain nothing but goose grease. Apparently substitution is not a modern misdemeanor.

Throughout the Papyrus Ebers the directions for diagnosing disease are curious and quaint. Two examples with treatment are given:

> "When Thou Examinest a Person Who is Suffering in His Abdomen and findest something in his backbone like the trouble in the knife-grinder's disease, then thou sayest: 'This is the uxedu that has spread to his back. He is ill. I will make him the Back-remedy.' It goes into him as if it had hopped in. Make for him a pot-yeast and then make him the following remedy:

[1] Physician and Leech, page 66, 1929.

Spring Plant	1
Peppermint	1
Resin-of-Acanthus	1
Mason's Clay	1

"Crush, cook in Yeast-of-*n*Seet-Beer, and smear on for four days in order to heal him at once."

When Thou Examinest The Obstruction in His Abdomen and thou findest that he is not in a condition to leap the Nile, his stomach is swollen and his chest asthmatic, then say thou to him: 'It is the Blood that has got itself fixed and does not circulate.' Do thou cause an emptying by means of a medicinal remedy. Make him therefore:

Wormwood	1/8
Elderberries	1/16
Asbesten	1/8
Sasa-chips	1/8

"Cook in Beer-that-has-been-brewed-from-many-ingredients, strain into one, thoroughly, and let the Patient drink."

From this diagnosis it is clear that the Egyptians recognized the circulation of the blood. A remedy for stye was as follows:

Red-lead	1
Powdered-wood-from-Arabia	1
Iron-from-Apollonopolis-parva	1
Calamine	1
Egg-of-an-Ostrich	1
Saltpetre-from-Upper-Egypt	1
Sulphur	1
Honey	1

Make into one and apply it to the Eyes.

To produce Milk in the breast of a woman about to suckle a child, Bones-of-the-Swordfish were warmed in Oil and her backbone smeared therewith. The same result could be brought about by mixing Fragrant Bread (which had been made from Soured Durra) with the Poppy-plant, and making her eat it while she sat cross-legged.

Testimonial writers were known in the Old Kingdom. Witness the testimonial following a prescription to drive away the turning-white of a burn:

"Durra-Bread-in-Oil-and-Salt.
Mix into one and apply as a plaster in order that he may become well at once.
It is quite true. I have seen it. It has often happened to me."

There are three diseases or conditions which are constantly being prescribed for in the Ebers Papyrus, the identities of which have never been satisfactorily explained. These are the "AAA disease," the "uxedu-disease," and the "Uha-disease." Various modern pathological states have been suggested for each of them, but the evidence at present indicates that they were different stages of *Chlorosis Aegyptica*, or the Egyptian hookworm disease. This was very common—about one of every four inhabitants being infected. That these diseases were considered as a scourge by the Egyptian doctors is shown by the scores of remedies that were suggested for their treatment.

The translation of the word *met* has given no end of worry to Egyptologists. Some think it was the nervous system; others the vasculatory system. Whatever it was the Egyptian doctor considered it of much importance for remedies to "stimulate and strengthen the *met*," remedies "to allow the *met* to take up the remedy," remedies for "the dried parts of the *met*," remedies "to refresh the *met* in every limb," etc. A poultice to "make the *met* supple" consisted of the following 36 ingredients:

Fruit-of-the Dompalm	Splinters - of - the-Sycamore	Goose Oil	Refuse - of - the - Flax-plant
Beans	Splinters - of - the-uan-tree	Hog's dung	Mineral-Salt
Amaa-grains	Resin-of-Acanthus	Elderberries	Anab-plant
Onions	Resin - of - the - Zizy-phus-Lotus	Myrrh	Red-lead
Splinters-of-the-Cedar-tree	Resin-of-the-am-tree	Garlic	Fresh-Lead-Earth
Splinters - of - the-Mulberry-tree	Resin-of-the-Sycamore	Herbs-of-the-Field	Natron
Splinters - of - the-Willow-Tree	Red-corn	Thorns-of-the-Cyperus	Fat-of-the-Bullock
Splinters - of - the-Zizyphus-Lotus	Berries-of-the-am-tree	Watermelon	Sasa-pieces
	White Oil	Barley-plant	
		Fennel	
		Abu - plant - from-the-Delta	

Possibly this polypharmic conglomeration had some advantages over our modern Warburg's tincture. At any rate, it is 4000 years older and it contains twice as many ingredients.

Self-medication was common in the later Egyptian ages, if we are to believe Herodotus. He says:

> For three successive days in each month they purge, hunting after health with emetics and clysters, and they think that all the diseases which exist are produced in men by the food on which they live; for the Egyptians are from other causes also the most healthy of all men next after the Libyans.

So far as the records indicate the Egyptian priests made no pharmacologic tests with drugs upon animals. However, Plutarch relates[1] that Cleopatra experimented with various poisons and venomous serpents on condemned criminals and on animals in order to learn what form of suicide was least painless. He states:

> Cleopatra was busied in making a collection of all varieties of poisonous drugs, and, in order to see which of them were the least painful in the operation, she had them tried upon prisoners condemned to die. But, finding that the quick poisons always worked with sharp pains, and that the less painful were slow, she next tried venomous animals, and watched with her own eyes whilst they were applied, one creature to the body of another. This was her daily practice, and she pretty well satisfied herself that nothing was comparable to the bite of the asp, which, without convulsion or groaning, brought a heavy drowsiness and lethargy, with a gentle sweat on the face, the senses being stupefied by degrees; the patient, in appearance, being sensible of no pain, but rather troubled to be disturbed or awakened, like those that are in a profound natural sleep.

SURGERY.

The Egyptians made no great progress in surgery. Their knowledge of anatomy was superficial as they were forbidden to dissect bodies, and their knowledge of physiology was equally weak. The earliest surgical operations of which we have records were described by W. Max Müller in the Smithsonian reports of 1904.[2] The records consist of engravings on the door posts of a tomb at Memphis, and date from about 2500 B.C. They depict the incision of a carbuncle; operations on the hand, knee and foot and also circumcision. The surgeon is operating with a flint knife. The attitudes of some of the patients as well as their conversation show that they are undergoing great pain. This would indicate that drugs for producing local anesthesia were unknown in the Old Kingdom. The patients circumcised were not infants or boys of seven or eight, but young men. From this evidence it is believed that circumcision of the men (at least in the earlier ages) was not performed by the Egyptians until shortly before marriage.

In later times circumcision was practiced on younger persons. Chabas[3] has described another wall carving from the temple of Khons in Thebes of about 1200 B.C. which depicts a

[1] Plutarch, "Life of Antony."

[2] "Egyptological Researches: Results of a Journey in 1904," page 60.

[3] *Revue Archeologique*, 3 (1861), 298.

surgeon performing circumcision (with a flint knife) on boys of six to eight years of age. A woman, probably a priestess, holds the boy's hands while another woman, presumably the mother, is sitting near. The children are believed to be the sons of Rameses II.

Comrie has described[1] what are probably the oldest known surgical instruments, except for the flint knife. They consist of 3 saber-shaped copper knives with hooked or incurvated handles. They were found in a tomb near Thebes and date from about 1500 B.C.

Dr. G. Elliot Smith[2] has described two sets of splints which he found wrapped around broken limbs in a cemetery of the Fifth Dynasty (2730–2625 B.C.). The first consisted of four pieces of wood, each wrapped in linen and bound around the thigh of a girl of about fourteen years of age. The femur was badly broken and the patient must have died from hemorrhage, for there was no evidence of healing of the bone. From their mode of application Dr. Smith concludes that these splints must have been quite useless as a support to the broken bone or as a restraint on the tendency of the thigh muscles to shorten the limb. Their only use must have been to fix the knee joint and insure some degree of rest to the damaged member. The examination of a series of healed fractures of the femur obtained from other tombs shows that there is considerable shortening, displacement of the fragments and an excessive development of callus. In the other instance of the use of splints the fracture was a compound one of the forearm. Three pieces of bark probably from the acacia had been separately wrapped in linen and placed around the limb. The bark did not form a complete tube around the limb but at the gap the space had been filled with coarse grass, probably to act as an absorbent of blood. Bandages and limb had then been wrapped with linen. No healing had taken place and the patient probably had died from hemorrhage, since fragments of blood-stained vegetable fibres (probably from the date palm) which had evidently been used to stop the bleeding, were still adhering to the bones.

The walls of the great ruined temple at Kom Ombo (Ptolemaic period) show a table of surgical instruments representing the clinic of Imhotep, the god of Medicine. It is a surprising revelation that many of the instruments are identical with those in use at the present day.

Although in the whole course of Egyptian medical history no records have been found to indicate that the abdomen was ever opened during life by the Egyptian surgeons for the cure of disease, it is quite possible that with this array of surgical instruments major operations may have been attempted. Neither do we find any evidence of skull trephining such as was practiced by the prehistoric inhabitants of Bolivia, Mexico and Peru,[3] or by some tribes of savages in modern times. There is some evidence that the Egyptian surgeons operated for stone in the bladder.

THE EDWIN SMITH SURGICAL PAPYRUS.

The Edwin Smith Surgical Papyrus, recently translated by Dr. James H. Breasted, is the oldest known medical work. It is now owned by the New York Historical Society. The original manuscript was produced about 3000 to 2500 B.C. It is not a mere collection of prescriptions but a handbook of practical treatment applied to wounds. It deals, therefore, not with remedies but with cases. The wounds are in various parts of the body, starting at the top of the head and proceeding downward as far as the thorax. The text comes to an end at this point. This indicates that this papyrus is probably a copy of a part of a surgical work which treated wounds for the whole of the body. At present it contains 48 cases which are presented in a systematic fashion: title, examination, diagnosis, verdict, treatment. The treatment is appropriate and rational. In this respect it differs greatly from most of the other medical papyri which treat disease.

Three forms of verdict are found: (1) "It is an ailment which I will treat;" (2) "It is an ailment I will contend with," that is, a curable malady; (3) "An untreatable ailment," that is, an incurable malady. Thirteen of the 48 cases are designated as beyond hope. The author had observed that wounds of the right side of the head caused paralysis of the left side of the body but he appears to have made no further application of this important physiological phenomenon.

DENTISTRY.

It is an astonishing fact that the Egyptians made no progress in dentistry. However,

[1] *Arch. f. Gesch. de Med. Leipz.*, 3 (1909), 269.

[2] *Brit. Med. J.*, I (1908), 732.

[3] Bur. Am. Ethnology, 16th Ann. Rep., 1894–1895.

according to the Edwin Smith Surgical Papyrus there were court dentists in the Old Kingdom. In the Archaic and Pre-Dynastic ages when the diet contained much uncooked grains and other coarse vegetable material, dental caries was rare. In later times after the wealthier classes had adopted luxurious habits, dental disease became more common.

The Hearst Expedition examined more than 500 skeletons of aristocrats of the time of the pyramid builders and found that tartar formation and alveolar abscesses were as common then as in Europe to-day.

Dr. Elliot Smith says:[1]

> There is in no case the slightest suggestion that any operative measures were adopted in order to cope with dental trouble, and in spite of frequent statements to the contrary, tooth-stopping was never practiced in ancient Egypt. Even the mummy of Amenophis III, often called The Magnificent, who reigned at a time when Egyptian power and luxury had attained their fullest expression, revealed no trace of any attempt to deal with the extreme condition of caries and alveolar inflammation found in his jaws.

The Egyptians worked in gold, silver, electrum and cement and made wonderfully beautiful and permanent inlays of quartz and lapis lazuli. They might readily have made copper tools for cleansing cavities with abrasives, and could have easily filled such cavities with hammered gold or cement. According to Kilmer[2] hyoscyamus was steeped in oil and used as a toothache cure.

DISTILLATION.

The Egyptians knew something about distillation. Cleopatra (not the notorious queen) wrote on distillation and gold making as well as on weights and measures at a very early date. The Egyptians knew of the poisonous properties of hydrocyanic acid. They referred to it as "the penalty of the peach,"[3] and it is probable that they knew how to concentrate it by distillation.

The water-bath, so common in every pharmaceutical laboratory, was invented by a celebrated Jewess named Mary who lived in Egypt. She was an eminent alchemist. Ebers asserts[4] that strychnine was known in the time of Rameses II. I have been unable to verify this from historical sources. It is certain, however, that the Egyptian priests knew a great deal about many poisons.

Bullock's blood, drawn fresh from the animal and swallowed, was considered as a deadly poison by the Egyptians. Herodotus relates that when the Egyptian king Psammenitus (Psamtik) was captured by Cambysses he was treated with cruelty at first, but afterward the Persian king was moved to pity the unfortunate captive and treated him kindly. Later Psammenitus was convicted of stirring his former subjects to rebel. Cambysses then condemned him to drink a quantity of bullock's blood. To quote Herodotus: "Such was the end of Psammenitus."

EMBALMING.

The art of embalming developed as a result of the belief in the physical resurrection of the body. The early inhabitants of the Nile Valley doubtless observed that the corpses of their dead were frequently preserved by simple desiccation in the hot sands. They observed, too, that certain chemical substances such as niter, salt, spices and wine had preservative properties and they began to use these substances in preserving dead bodies. It is probable that embalming in a crude form began about the time of the First Dynasty. By the Twenty-first Dynasty (1090 B.C.) it had reached a state of perfection that was never afterward surpassed and the results are the wonder of the twentieth century morticians. Herodotus tells us that in his day (shortly after the Persian Conquest) there were three forms of embalming. The most complex and expensive is quoted from his description:

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[1] Introduction to The Papyrus Ebers, translation by Dr. Cyril P. Bryan.

[2] *Am. J. Pharm.*, 102 (1930), 700.

[3] *Ibid.*, 102 (1930), 299.

[4] "Uarda, a Romance of Ancient Egypt."

> First with a crooked iron tool they draw out the brain through the nostrils, extracting it partly thus and partly by pouring in drugs; and after this with a sharp stone of Ethiopia[1] they make a cut along the side and take out the whole contents of the belly, and when they have cleared out the cavity and cleansed it with palmwine they cleanse it again with spices pounded up; then they fill the belly with pure myrrh pounded up and with cassia and other spices except frankincense, and sew it together again. Having so done they keep it for embalming covered up in natron for seventy days, but for a longer time than this it is not permitted to embalm it; and when the seventy days are past, they wash the corpse and roll its whole body up in fine linen cut into bands, smearing these beneath with gum, which the Egyptians use generally instead of glue. Then the kinsfolk receive it from them and have a wooden figure made in the shape of a man, and when they have had this made they enclose the corpse, and having shut it up within they store it then in a sepulchral chamber, setting it to stand upright against the wall. Thus they deal with the corpses which are prepared in the most costly way.

Herodotus does not mention the next stage of the process, that is that of desiccation. We know that the body was dried after being taken from the salt-bath and washed, but we do not know the details. Yeivin[2] believes that there is evidence that artificial heat was used. The embalmer of the Twenty-first Dynasty packed the body under the skin with mud and other padding material and moulded the tissues into the shape and plumpness which they possessed during life.

The obstetric chair was in use in Egypt as early as the Sixteenth Century B.C. according to Exodus.[3]

And the King of Egypt spoke to the Hebrew midwives. . . .;

> And he said, When ye do the office of a midwife to the Hebrew women, and see *them* upon the stools; if it *be* a son, then ye shall kill him; but if it *be* a daughter, then shall she live.

There is some evidence to indicate that there were apothecaries, as distinct from physicians, in the later Egyptian ages. For example, we read in Exodus[4] that the Lord commanded Moses to take myrrh, sweet cinnamon, sweet calamus, cassia and olive oil, and to

> "make it an oil of holy ointment compounded after the art of the apothecary;[5] it shall be a holy anointing oil."

PALEO-PATHOLOGY OF THE ANCIENT EGYPTIANS.

From examinations of thousands of mummies and skeletons pathologists have learned much about the diseases which afflicted the old Nile-dwellers. Syphilis and rickets were unknown; cancer was extremely rare; rheumatoid arthritis and alveolar abscesses were common. Mastoid disease, adhesions from appendicitis, pleural adhesions, fusion of the atlas to the occiput from spondylitis deformans, cranial ulceration in women from carrying water jars, necrosis of the bones, tuberculosis of the bones, gall stones, stone in the bladder, arteriosclerosis, hookworm disease, infantile paralysis and leprosy have been found. The hair whitened with age and baldness was common. A statue of Queen Mertitefs of the Fourth Dynasty[6] has large, staring eyes, which suggests possible exopthalmic goiter, although Petrie believes this to be one of the types of the inhabitants. The neck is probably enlarged but of this we cannot be sure.

ANCIENT APPRECIATION OF EGYPTIAN MEDICAL KNOWLEDGE.

Nearly all writers of the ancient world, both historical and poetic, acknowledge the su-

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[1] In the process of embalming the flint knife was used for opening the abdomen long after metal tools came into use.

[2] *Annals of Archaeology and Anthropology*, 13 (1925), 15.

[3] The book of Exodus, 2, 15–16.

[4] Exodus, 30, 25.

[5] Some scholars translate this word as "perfumer."

[6] Figured by Petrie, "A History of Egypt," 1 (1899), 10.

premacy of Egypt in medical knowledge. In the Odyssey tribute is paid by Homer[1] to the magic virtues of Egyptian drugs and to the wondrous land which produces them:

> But Jove-born Helen otherwise, meantime,
> Employ'd into the wine of which they drank
> A drug infused, antidote to the pains
> Of grief and anger, a most potent charm
> For ills of ev'ry name. Whoe'er his wine
> So medicated drinks, he shall not pour
> All day the tears down his wan cheek, although
> His father and his mother both were dead,
> Nor even though his brother or his son
> Had fall'n in battle, and before his eyes,
> Such drugs Jove's daughter own'd, with skill prepar'd
> And of prime virtue, by the wife of Thone,
> Ægyptian Polydamma, giv'n her,
> For Ægypt teems with drugs, yielding no few
> Which, mingled with the drink, are good, and many
> Of baneful juice, and enemies to life.
> There ev'ry man in skill medicinal
> Excels, for they are sons of Pæon all.

About 590 B.C. the prophet Jeremiah wrote:

"Go up into Gilead and take balm, O virgin, the daughter of Egypt; in vain shalt thou use many medicines; for thou shalt not be cured."[2]

Herodotus states:

"Cyrus sent to Amasis (about 545 B.C.) and bade him for an occulist[3]—the best in the whole land of Egypt."

SUMMARY.

Medicine in ancient Egypt was in the hands of the priesthood. The priest-physicians acquired considerable skill in diagnosis, which is remarkable, considering their limited knowledge of anatomy and physiology. They depended more upon magic and prayer for the cure of disease than upon drugs, or at least they depended on magic and incantations to make their remedies efficacious. They used a very large number of substances as medicines, for the most part without skill or discrimination. Among these, however, were aloes, castor oil, henbane, opium and bark of pomegranate root, which were used for the same therapeutic purposes as in modern times. At least 18 of their drugs are described in the U. S. P. X. The Egyptians made progress in minor surgery and in the treatment of broken bones, but whether or not major operations were performed is not known. They knew nothing of dentistry. With the possible exceptions of hookworm disease and those conditions for which constipation is a symptom, it is probable that the magic and medication of the Egyptian physicians accomplished but little in the relief of human suffering.

ADDITIONAL REFERENCES.

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H. R. Carter and A. C. Mace, "The Tomb of Tut-ank-Amen," 1923.

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[1] Odyssey, Book 4, translated by William Cowper.

[2] Book of Jermiah, 46, 11.

[3] Dr. Georg Ebers in his fascinating novel "An Egyptian Princess," gives the name of Nebenchari to this priest-oculist. Kassandane, the wife, and later, widow of Cyrus, was afflicted with cataracts. Nebenchari removed them by cutting away the films and the patient was restored to sight. Also Petammon, using the technic described by Nebenchari, removed the cataracts from the eyes of the Egyptian king, Amasis.

W. R. Dawson, "Magician and Leech," 1929.

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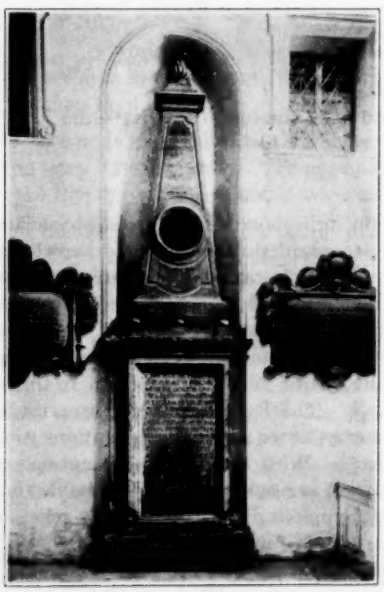
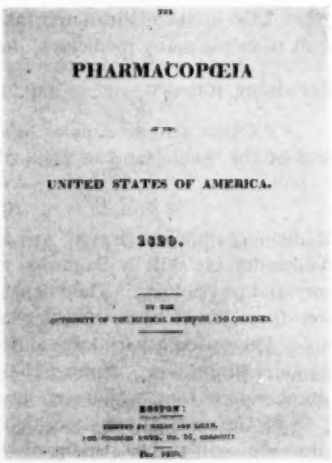
A. C. Wootton, "Chronicles of Pharmacy," Vol. I, 1910.

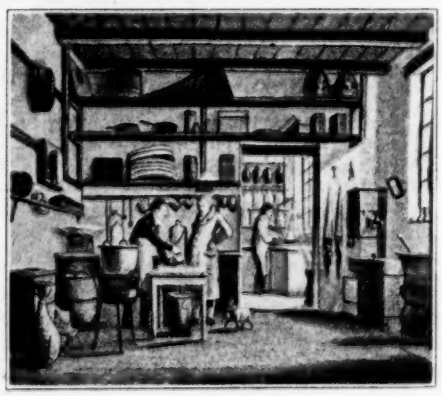
ACKNOWLEDGMENTS.

In preparing this paper I have received many helpful suggestions from Mr. Aaron Lichten, Mr. Milton Fairchild and Dr. C. A. Browne and I am especially indebted to the latter for the loan of several of the lantern slides used. Also I wish to thank the Carnegie Institution of Washington, the American Medical Association, Dr. C. B. Bryan and the Museum of the University of Pennsylvania for permission to prepare lantern slides from their materials. Especial thanks are due to Mr. A. S. Mitchell and to Miss Helen McKay for their help in editing.





U. S. P. I.



Above.—Tomb of Paracelsus, at Salzburg. (See page 1355, December 1930 JOURNAL.) Right.—Laboratory of pharmacist d'Ailly, after a painting by Jelgershuis (1818). Here quinine was manufactured in 1825, after its discovery by Pelletier and Caventou. The former was one of the most brilliant workers in pharmacy. Right—above.—Reduced title page, U. S. Pharmacopœia I (1820). Reading text 3½ x 6 inches. (Dr. Lyman Spalding.)

THE SECTIONS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

ABSTRACTS OF THE MINUTES OF THE SESSIONS HELD IN MIAMI, JULY 29–31, 1931.

(See also brief summary reports, Final Session House of Delegates, printed in the September JOURNAL—titles of papers will be given in the minutes; discussions, if any, will be printed when paper is published. The Editor will be thankful for correction of errors.)

SCIENTIFIC SECTION.

The First Session of the Scientific Section was called to order by Chairman E. E. Swanson on Wednesday, July 29th, at 2:15 P.M. The Chairman requested Secretary L. W. Rowe to take the chair while he read his address. The Chairman's address follows:

THE CHAIRMAN'S ADDRESS.

BY EDWARD E. SWANSON.

The Scientific Section of the AMERICAN PHARMACEUTICAL ASSOCIATION according to records is an outgrowth of the Section on scientific articles. This Section on Scientific Papers was founded in the early days of the ASSOCIATION. In the beginning of this Section the number of papers read could be numbered on the fingers of one hand. To-day at this annual meeting we have more than sixty or seventy papers. These articles are researches in Bacteriology, Chemistry, Pharmacognosy and Botany, Pharmacology and Bioassy, and Pharmacy. We have classified them as near as possible according to the above subdivisions. They are contributions from colleges, universities, commercial laboratories and pharmacies.

Many of these papers are the outgrowth of an interest in medicinal substances which may have an indirect or direct bearing as to what should be official or not official in the next Pharmacopœia. According to the history of the Pharmacopœia as stated by Past-President Dr. Reid Hunt of the Pharmacopœial Convention "the object of the Pharmacopœia is the promotion of medicine and pharmacy by selecting such materials that have been carefully studied, that they may be properly used as medicine and drugs, establishing formulas for their preparations and standards for identity, strength and purity." Many of the medicinal drugs and chemicals in the Pharmacopœia which were extensively used in the past are now being found practically useless. The founders of the Pharmacopœia probably had this in mind when they stated that substances of proven medicinal and pharmaceutical value should be admitted in the Pharmacopœia.

The AMERICAN PHARMACEUTICAL ASSOCIATION and we of the Scientific Section of this ASSOCIATION have had and will have in the future a part in the revision of the future Pharmacopœias. It is apparent that our duty in this revision is to establish the identity, strength and purity of medicinal and pharmaceutical substances. It is the duty of the physician to establish the dosage and clinical value of the products in the Pharmacopœia. With the close coöperative efforts of all concerned an efficient and useful Pharmacopœia can be formed. As stated by Past-President Reid Hunt of the Pharmacopœial Convention "the medical profession is appreciating more and more the value of the Pharmacopœia."

There are other fields of research in which we should take a more active part. Dr. Langenhan as chairman of this Section last year stated, "that manufacturing and dispensing pharmacy has advanced so rapidly during the last decade that neither text books nor instructors have been able to keep abreast with the progress; mainly because an insufficient amount of research, relating to these two subjects, has been carried on and published." There are many galenicals not in the U. S. P. or N. F. of which little is known that should be investigated chemically, pharmacologically and therapeutically. There is the important question of isolation, purification and stability of many well known medicinal and pharmaceutical substances. Thus it is apparent that we have unlimited resources for study and research. These researches should be encouraged for publication.

In the past the publications in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION have been papers of quality and usefulness for the advancement of research. Our editor, indeed, has issued a JOURNAL of which we can be proud. The task of compiling these issues is not an easy one. Many of the Medical and Scientific Journals have associate editors to assist the editor in the selection and criticism of papers. Would it not be for the advancement of our JOURNAL if we would consider a similar plan?

May I therefore suggest for your consideration (1) That we have an auxiliary committee to aid the editor in the papers from the five subdivisions: Chemistry, Bacteriology, Pharmacognosy and Botany, Pharmacology and Bioassay and Pharmacy.

(2) That this Auxiliary Committee be selected from educational institutions who are considered an authority in their respective fields.

(3) That this Auxiliary Committee assist the editor in the selection and criticisms of papers to be published.

(4) That the names of these members of the Auxiliary Committee with their respective subdivision be published in a prominent part of each issue of the JOURNAL.

Such coöperative efforts should increase the quality of the papers as well as the standing of the JOURNAL.

In closing may I extend my thanks to those who have worked so faithfully in the preparation of this program and to the Section for the honor of being chairman of this Section. May I also extend my sincere appreciation and thanks to our secretary who has so faithfully arranged this program? If this session is a successful one, as I assume it will be, it is due to his work and efforts.

The address was referred to the following Committee, W. J. Husa, M. R. Thompson and Ralph E. Terry.

The report of the Secretary was read and on motion duly carried, accepted, it follows:

REPORT OF THE SECRETARY.

Two general notices were sent out to a mailing list of 269 members under dates of January 16 and April 25, 1931.

Seventy-one titles appear on the printed program of our Section in addition to the eight items of the Joint Session with the Section on Practical Pharmacy and Dispensing. This speaks very well for the continued and increased interest in our Section's activities.

Much correspondence was taken care of but the Secretary regrets that it was not always as prompt and complete as it should have been. He takes this opportunity of thanking the members of the Section for their patience and their support, the Chairman for his coöperation and the national officers, Editor Eberle and Secretary Kelly, for their valuable assistance and advice.

Respectfully submitted,

L. W. ROWE, *Secretary.*

The report of the Committee on Monographs was read and on motion duly seconded and carried it was accepted.

Chairman John C. Krantz, Jr., reported that the Committee on National Research Conference had no formal report to make but assured the officers and members of the ASSOCIATION that the Conference will be glad to continue coöperation with the ASSOCIATION to the best of its ability. The report was accepted.

Chairman Swanson announced the reading of the papers.

Papers were submitted in the following order:

"The Pharmacognosy, Chemistry and Pharmacology of Viburnum. III. Viburnum Opulus **var.** Americanum. Its History, Botany and Pharmacognosy," by H. W. Youngken.

"Vein Islets as Means of Identifying Drugs and Detecting Adulterants," by C. J. Zufall and Alleda Burlage.

"Studies on Aconitum. I. Aconitum Napellus L and Its Varieties," by H. W. Youngken.

"The Development and Examination of a Citrus Fruit," by Forest J. O. Goodrich.

The author stated that this was only a preliminary report. That progress had been made in the study presented in the paper.

Chairman Swanson appointed the following Committee on Nominations: *Chairman,* F. E. Bibbins, W. H. Zeigler and H. C. Arnold.

The reading of papers was continued as follows:

"Some Comparative Observations on Irradiated Ergosterol and Cold Liver Oil," by E. O. Prather, Jr., Martha Nelson and A. R. Bliss, Jr.

"The Strychnine-Brucine Ratio of Nux Vomica and the Relative Potency of These Alkaloids," by R. W. Morrison and A. R. Bliss, Jr.

'Thallium Poisoning in Migratory Birds," by Justus C. Ward.

"Studies on Strychnine. III. The Effect of Quinine upon the Taste Threshold of Strychnine," by J. C. Munch and J. C. Ward.

"Studies on Strychnine. IV. Further Studies on the Masking of Strychnine Taste by Sweetening Agents," by J. C. Ward and J. C. Munch.

"Studies on Strychnine. V. The Masking of Strychine Taste by Combinations of Sweetening Agents and Inorganic Salts," by J. C. Ward and J. C. Munch.

"The Application of Statistical Methods to Pharmaceutical Research. III. The Fitting of Straight Lines to Experimental Data," by James C. Munch.

"The Bioassay of Mydriatics and Miotics," by James C. Munch.

"The Bioassay of Adonis Vernalis, N. F.," by James C. Munch.

"The Bioassay of Apocynum, N. F.," by James C. Munch.

"The Bioassay of Convallaria Majalis, N. F.," by James C. Munch.

"Further Studies on the Biological and Chemical Assay of Anthelmintics," by James C. Munch and Wm. F. Reindollar.

"A Series of Toxicological Investigations. I. Mercury and Lead," by L. W. Rising and E. V. Lynn.

"A Series of Toxicological Investigations. II. Cocaine and Morphine," by L. W. Rising and E. V. Lynn.

"A Series of Toxicological Investigations. III. Phenol and Iodine," by L. W. Rising and E. V. Lynn.

"Further Studies of the Pharmacology of the Viburnums," by James C. Munch and H. W. Youngken.

The First Session of the Scientific Section was then adjourned.

JOINT SESSION SCIENTIFIC SECTION AND SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The Joint Session of the Scientific Section and the Section on Practical Pharmacy and Dispensing was called to order by Chairman E. E. Swanson of the Scientific Section at 8:15 P.M., July 30th.

The first order of business was an illustrated talk by Prof. Anton Hogstad, Jr., on "The Activities of the Missouri Botantical Gardens." (This will be reported in the JOURNAL in a later issue.)

Professor Hogstad received a hearty vote of thanks.

The next order of business was the report on the U. S. P. by Chairman E. Fullerton Cook. The report follows:

REPORT OF THE CHAIRMAN OF THE U. S. P. XI COMMITTEE OF REVISION.

BY E. FULLERTON COOK.

The 1930–1940 decade in Pharmacopœial Revision is different in some respects from any other with which the present Chairman has been associated. The work of the Committee began a year ago with many changes in Sub-Committee organization and with new chairmen leading a number of groups. Such changes come periodically from entirely natural causes and are, of course, wise and necessary. It must be confessed, that as the General Chairman faced the work ahead, a year ago, without the active and experienced leadership in Sub-Committees of such men as Wood, Kraemer, Beringer, Arny, LaWall, Rosengarten, Lyons and Sollmann, who had helped for two or in some instances, for even three revisions, it was with some trepidation and wondering as to what a year would accomplish.

Fortunately, the policies of this former period had trained some of the yonger men into the work of Revision and others came well equipped for the great responsibilities of our task, and,

nine of the fifteen Sub-Committee chairmen had not served in that capacity during the last revision, the results have been most gratifying.

There is a great opportunity before this Revision Committee, the medical sciences are advancing with tremendous strides; science is in control and the United States Pharmacopœia must reflect the advances in therapeutic thought and in the supporting sciences and must offer leadership, not historic pictures. The sanctity of tradition must not blind us to truth, but we must not be swept from a judicial position by revolutionary tendencies and refuse to consider he findings of the fathers simply because they are not new.

Scope.—The Scope decisions have been reflecting this spirit of progressiveness, yet to date over 500 U. S. P. X titles have been admitted to the new Pharmacopœia. On the first vote, after discussion, at least a two-third vote has been required to either admit or delete a U. S. P. X title.

While all titles of the present Pharmacopœia have now passed this first stage there are a number which remain in the undecided group and must now be rediscussed and again voted upon. The Sub-Committee is just starting the consideration of new substances for admission to the U. S. P. XI.

The subject of admissions and deletions will always be of great interest to this ASSOCIATION both because of its active affiliation with Pharmacopœial Revision and the application of Pharmacopœial standards to the daily task, but also because these decisions influence the character and scope of the National Formulary.

The policies of the two books would seem to be drawn more sharply in this decade than ever before and, as a result, offer even greater justification for both books.

It must be remembered that the U. S. P. was originated by a group of physicians for the purpose of offering a selected list of remedies to physicians. These were intended to represent the substances considered of first importance by the therapeutic experts of the period of the revision. Each decennial revision was expected to revise this list in accordance with the developments of ten years.

The fact that the Pharmacopœia was made the basis of standards under the Food and Drugs Act took away no right established by those who controlled the Pharmacopœia, and had already followed this policy for almost a century.

The N. F., on the other hand, was started for the purpose of supplying formulas or medicines of uniform strength, which justified consideration because of use by physicians, yet had not found a place in the Pharmacopœia.

These policies give ample scope to both books and give to each a legitimate field without rivalry.

An excellent illustration is found in Solution of Potassium Arsenite (Fowler's Solution). The Scope Sub-Committee at the recent meeting discussed this solution at length. It was well known that it has extensive use by physicians and its therapeutic merit was not under serious question yet one Sub-Committee reported that pharmaceutically it was unsatisfactory as someone put it, "a pharmaceutical mess." It was shown that it was an imitation, about a hundred and fifty years ago, of a proprietary product and was variable in color and often precipitated. It was also frequently deficient in strength as indicated by the assay, due either to failure on the part of the pharmacist to get all of the arsenic trioxide into combination or perhaps due to chemical changes which rapidly altered the tri-valent arsenic to the penta-valent form. The Therapeutics Sub-Committee was asked if there was any known difference in the therapeutic values of these two forms of arsenic and reported as follows: "Three did not vote, two said they did not know, two voted 'no,' and two voted 'yes.'"

It was also shown that as an alkaline solution, it is frequently the cause of incompatibilities in prescriptions.

With this array of attack against it, it was shown that there was another official solution of arsenic, Liquor Acidi Arsenosi, which was of equal therapeutic value, was a creditable pharmaceutical preparation, did not deteriorate and was acid in reaction, thus avoiding most incompatibilities when in combination, especially with iron.

If you were a member of the Committee how would you have voted? The recommendation is to delete.

Here, however, the N. F. policy permits its inclusion entirely, properly and logically since a standard is important due to its present extensive use. The duty of the Pharmacopœia, of

course, will be to broadcast the facts here given and urge physicians to hereafter use Solution of Arsenous Acid rather than Solution of Potassium Arsenite, when its therapeutic effect is needed.

It is intended that early in the Fall a list of U. S. P. X titles will be announced which have failed to gain admission to the new Pharmacopœia. Such substances are usually referred to as "deleted" although this term does not properly apply since they were never included in the U. S. P. XI list.

The Chairman has requested the members of the Sub-Committee on Scope to provide statements explaining the reasons which influenced the action of the Sub-Committee in their exclusion of the more outstanding titles. Where statements will accompany the list of titles and, at the same time, the Chairman will invite anyone who does not agree with the action taken to submit reasons for disagreement. All such statements received will be copied in full with the names of the senders and the Sub-Committee on Scope will be asked to reconsider their action, if contrary evidence is presented.

Resolutions of Associations, asking for retention, are not an influential form of evidence; supply facts and personal experiences from individuals if possible.

Survey of Drugs Used in Prescriptions.—Several such studies have been made in recent years, but one other is now being carried on under the auspices of the U. S. P. Board and N. F. Committee. While "extent of use" is not a deciding factor, it must be recognized as one of the important points to consider when the U. S. P. Scope is revised. The General Principles recognize first *value*, secondly whether *"sufficiently used."*

Literature Abstracts.—We are fortunate in having abstracts of literature made available from two sources, *i. e.*, the A. PH. A. "Year Book" and the "Squibb Abstract." Such literature studies are essential to the work of revision but the Sub-Committee chairmen cannot depend fully upon these prepared abstracts. One of the important qualifications of a Sub-Committee chairman is his personal familiarity with the current literature in his own field and also his individual experience with the practical application of the questions before his Sub-Committee.

Auxiliary Members to Sub-Committees.—The election of auxiliary members to Sub-Committees has again proven of help in the Revision. This is particularly true in special fields in which the Committee of Revision needs the aid of experts in a specific field. In Biological Standardization and in the Vitamin study this has been especially important.

Coöperation of the Food and Drug Administration and the Public Health Service.—It is gratifying to be able to report that the work of Revision is receiving the fullest support in the work of Revision from Mr. Campbell, Mr. Dunbar, Dr. Durrett, Mr. Warren and all officials of the Food and Drug Administration.

Revision questions have been freely discussed with these officials and there exists the fullest understanding and most harmonious coöperation between the Department and the Pharmacopœial Committee and the assurance that we shall have the assistance of their organization in every phase of the revision.

We also have complete understanding and coöperation from Dr. McCoy and his assistants in the National Institute of Health laboratory.

Coöperation of the A. D. M. A., the A. P. M. A. and the A. Ph. A.—The members and officers of the American Drug Manufacturers' Association and of the American Pharmaceutical Manufacturers' Association were conscious of the feeling of antagonism expressed against them so freely by some of the delegates to the 1930 U. S. P. Convention. The deliberate exclusion of valuable and experienced members of the scientific staffs, of both organizations from the Committee of Revision and the refusal to admit to the Convention delegates from the latter organization, developed a situation, which, if continued, would have been most unfortunate for the success of the work of revision. Fortunately, there has been restored the fine relationship formerly existing between the scientific groups in the first two of these organizations and the Committee of Revision and they and the A. PH. A. have supplied many individuals as auxiliary members to Sub-Committees. We have the assurance that we shall have the benefit of criticisms and constructive help on texts as the revised copies are made available. The Chairman will take full advantage of this, for the assistance of these scientific workers has been invaluable to the Pharmacopœial Revision for many years.

A Conference of the Committee of Revision.—A meeting of the Committee was called at the close of the first year of revision. This was held at the Pocono Manor Inn, Pennsylvania.

Forty-six of the members were present and excellent results followed both General Committee Meetings and Sub-Committee Conferences.

The Vitamin Conference.—This Conference, authorized by the Board of Trustees, met in New York on Thursday, May 7th. At least twenty-six of those invited were present, and results of the greatest value were obtained. It is anticipated that another meeting will be called early in the Fall after the London Conference of July 17th called by the Health Organization of the League of Nations. It is believed that the greatest benefit will come from this Conference.

The details of the Conference and the resulting recommendations will appear in full in the Circulars of the General Committee.

Bio-Assay Conference.—On Wednesday, June 24th, a conference of those interested in Bio-Assays was held in Philadelphia. Members of the Bio-Assay Sub-Committee had invited representatives of the Food and Drug Administration, of the Public Health Service and of many drug firms with others interested in these assay methods were present. It is hoped that from this conference may be developed correct standards and assay methods for a number of important drugs.

Volatile Oil Conference.—Carrying out a policy, followed for at least three decades, producers and dealers in volatile oils were invited to attend a conference called in Philadelphia on Wednesday, June 24th. It is expected that many suggestions will be offered as an aid to the Sub-Committee in establishing new standards.

The Cuban Auxiliary Commission on Pharmacopœial Revision.—The Cuban Commission on the U. S. P. Revision has been organized and is receiving the U. S. P. Circulars as they are issued. A voluntary Committee in Cuba during the last decade gave valuable suggestions to our Committee through a series of articles and it is anticipated that again we shall receive suggestions which will make the U. S. P. of greater value to our Sister Republic. The Commission is as follows: Dr. José Guillermo Diaz, Dr. Gerardo Fernandez Abreu, Dr. Rosa T. Lagomasino, Dr. José Capote y Diaz, Dr. Celestino Garcia Morales, Dr. Pedro Castillo, Dr. Antonio Valdes Dapena, Dr. Eugenio Crabb, Dr. José P. Alacan, Dr. Angel Pere André.

The Porto Rico Auxiliary Commission on Pharmacopœial Revision.—The following membership for this Commission have just been suggested by those in authority in Porto Rico.

For the University of Porto Rico: Lucas Luis Velez, Dean, School of Pharmacy; Louis Torres Diaz, Ass't. Professor Pharmacy and Drug Assay, School of Pharmacy.

For the Pharmaceutical Association of Porto Rico: Washington Llorens, Secretary of the Association.

For the Medical Association of Porto Rico: Dr. Julio B. Colon, Dr. Jacobo Simonet, Professor of Materia Medica, Pharmacy School; Dr. L. A. Salivia, Professor of Bacteriology, Pharmacy School.

The Philippine Auxiliary Commission.—The Chairman has sent several letters to Manila inviting the appointment of a Philippino Commission but up to this time no reply has been received.

Supplements to the U. S. P. X.—The 1930 Convention voted approval of the issuance of supplements to the Pharmacopœia whenever, in the opinion of the Committee, this was deemed necessary. This authority has been given the Committee for at least three decades and has been taken advantage of on a number of occasions. There has always, however, been an attitude of conservatism toward the making of interim revisions, for it has been found that proposed changes, especially when actively advocated, frequently represented some "special interest" and upon thorough investigation was found to be unnecessary or unwise.

The second objection to such interim changes in standards is the difficulty in securing complete publicity for the change. For this reason, the Chairman in his Report to the Convention suggested an "Annual Supplement" which he believed would be anticipated, if issued regularly and might gradually develop into an important feature of the Revision, in fact might eventually make unnecessary the long, drawnout decennial revision and furthermore would introduce some flexibility into official standards and insure the reflecting of the latest scientific developments by the Pharmacopœia.

The Committee on the Chairman's Report did not approve the Annual Supplement idea because it thought it might not always be necessary to issue such a supplement, but approved such publication whenever necessary.

Several standards of the present U. S. P. need revision and steps are being taken to adjust these as soon as possible when new standards will be issued. This applies particularly to Cod Liver Oil and Ergot.

Pharmacopœial Publicity.—Plans are being developed by a special Committee whereby it is hoped that monthly bulletins can be issued to the medical and pharmaceutical press covering the technique of medication and some therapeutic values of official preparations and drugs.

Death of Professor E. V. Howell.—It is regrettable to be compelled to introduce into the first report an announcement of the death of one of the members of the Committee. Dean E. V. Howell died from pneumonia on February 14th.

Within an appropriate time nominations were called for the filling of this vacancy, resulting in the election of Mr. Joseph Rosin. Mr. Rosin brings great strength to the chemical work of the revision through his experience as the assistant to Dr. Rosengarten during the revisions of the U. S. P. IX and U. S. P. X.

Conclusions.—Although only one year of revision has passed, the progress in many divisions is notable. This does not mean that the total time of revision is likely to be greatly reduced for the mechanical details of checking every test, the carrying forward of revised tests from Sub-Committee discussion, experimentation and approval, to the General Committee, to the public, then into manuscript, and laborious galley and still more exacting page proof and finally the printed book, requires time and labor. It is more important to have every text right when it does appear than to unduly speed the work.

Nevertheless, the present chairman pledges his best effort toward the prompt appearance of the new Pharmacopœia.

The report was on motion duly seconded, carried and received.

The report by R. L. Swain on Maryland Prescription Count was presented. (It is printed in the September JOURNAL, page 938.)

The report of the Committee on National Formulary was called for. Chairman E. N. Gathercoal summarized the report and spoke of the research work being done; he also referred to the surveys being made from the standpoint of useful suggestions for revision work and other values. The report of the Committee follows:

REPORT OF THE CHAIRMAN OF THE COMMITTEE ON NATIONAL FORMULARY.

BY E. N. GATHERCOAL.

To the Council of the American Pharmaceutical Association:

The Committee on National Formulary has maintained a high degree of activity since the Cleveland meeting of the Committee in 1930.

Bulletins and Sub-Committee Letters have been issued from the Chairman's Office to the extent of 300 pages during the year. These are distributed, in whole or in part, to about 66 persons including members, auxiliary members and coöperators on the revision work.

The Committee met for a two days' conference at Pocono Manor Inn, June 29 and 30, 1931, and accomplished much in the four sessions held on these two days. In addition to the sessions held by the entire Committee, each Sub-Committee held one or two meetings and markedly advanced the Sub-Committee work. All the fifteen members of the Committee were present and also Associate member Cook, Chairman Krantz, of the Committee on Unofficial Standards, and Secretary Kelly of the A. PH. A.

The work of the Committee during the past year may be described along five general lines, each of which will be presented under an appropriate heading, as follows:

Conduction of Research Investigations.
The Establishment of Foundational Principles of Revision.
The Preparation of Statistical Tabulations.
Admissions into N. F. VI.
The Study of Individual Monographs.

CONDUCTION OF RESEARCH INVESTIGATIONS.

The conduction of research investigations of important problems in connection with National Formulary preparations, and supported in part by grants from the N. F. Research Fund, is an outstanding feature of the work of the Committee during the past year.

Dr. Scoville early proposed a study of the scientific foundations upon which rest certain empirical practices in extractive operations. This study has been carried on at the University of Washington College of Pharmacy under the direction of Dr. Langenhan. It was suggested at the Committee Conference this year that Dr. Scoville should engage a suitable assistant and continue the work in his own laboratory during the coming year.

Dr. Fantus has proposed and is guiding a study of certain phases of ampul preparations, in anticipation of the admission of an increased number of ampuls to N. F. VI.

Dr. Langenhan is supervising an extensive study of the U. S. P. and N. F. Liquors. He, no doubt, will give similar consideration to other important groups of preparations under consideration by his Sub-Committees.

Dr. Jenkins is guiding a study of chemical tests and assays as applied to N. F. chemicals.

Mr. Becker, Professor Bachman and the auxiliary worker, Miss Laurine Jack at the University of Minnesota College of Pharmacy, have made important studies on the N. F. pills.

Dr. J. J. Durrett of the U. S. Food and Drug Administration has originated an extensive critical review of the titles and synonyms in Part I of the National Formulary. Dr. Arny has applied these criticisms to a study of the N. F. Nomenclature .

Other members, including the Auxiliary Sub-Committees on Dental Preparations and on Veterinary Preparations have also been active.

THE ESTABLISHMENT OF PRINCIPLES OF REVISON.

The establishment of principles of revision is an important phase of the Committee work. Mention might be made of the following actions taken by the Committee during the past year.

(1) We have undertaken a revision and completion of the General Principles of Revision with the understanding that these will be published in full in the Preface of N. F. VI.

One important modification of General Principles No. 1 on Scope has been made, by which simple medicinal materials will be admitted to N. F. VI on the basis of extensive use, even if they are not employed in any National Formulary preparation.

(2) A complete set of General Notices adopted from the U. S. P. General Notices but adapted to the National Formulary will probably be included in full at the beginning of the text of N. F. VI. No extensive changes nor modifications of the General Notices of U. S. P. XI are contemplated.

(3) The very extensive, accurate and complete descriptions of General Tests, Processes and Apparatus as found in the back part of the U. S. Pharmacopœia will not be copied into N. F. VI, but reference to the U. S. P. text will be made in the N. F. monographs where desired. This action was taken not only to save space in the National Formulary and unnecessary duplication of printing, but particularly to avoid any possibility of differences or deviations in the official methods for these tests, reagents, processes, etc.

(4) The N. F. Sub-Committees dealing with Crude Drugs and with Chemicals have adopted a fairly uniform style of monograph, so that the monographs of Part II of N. F. VI will possess a very desirable degree of uniformity.

THE PREPARATION OF STATISTICAL TABULATIONS.

The preparation of statistical tabulations on the extent of use in the pharmacies of the United States of N. F. V preparations and of new preparations proposed for inclusion in N. F. VI, has been an important part of the Chairman's activities during the year past.

We have completed and published the survey on the extent of use of the 570 N. F. V galenicals. Reports were received from 76 hospital pharmacists, 213 prescription drug stores and 625 ordinary drug stores throughout the United States. Especial credit should be given to Editor Mayes and the *American Druggist* for the distribution of questionnaires among retail drug stores of the United States and the tabulation of the data received from 625 of them.

The reports indicated a "large," "medium," "small" or "no" use. The tabulated data included more than 400,000 items. The results were finally read in "percentage of use," and nearly all of the items so far admitted to N. F. VI are used in 20 per cent or more of the pharmacies of the United States. Based on an estimate of 60,000 such pharmacies, a preparation to be admitted to the National Formulary must be used in at least 12,000 pharmacies in the United States.

A similar survey on 437 unofficial preparations proposed for inclusion in N. F. VI is now in process. A preliminary report of this survey was presented at the 1931 conference of the Committee.

A *Prescription Count* was instituted more than a year ago in a suburb of Chicago. All of the prescriptions in the 12 drug stores of this suburb that were filled during the year 1929 were counted, both refills, new, regular and narcotic. The number of prescriptions filled during the year averaged about 2.75 per person in the suburb.

A similar count was made in Rockford, Ill., a city of nearly 100,000 population. Here the number averaged about 2.95 per person per year.

Then Dr. R. L. Swain of Baltimore undertook a similar count for the entire state of Maryland. He finds the average annual prescription fill for the 650 odd stores of Maryland to exceed 5000 prescriptions per store and for the city of Baltimore to be almost exactly 3.0 per person per year. However, in the whole State the average is but slightly above 2 per person per year.

Based on these figures the total prescriptions filled annually in the drug stores of the United States would approach 300,000,000.

Surveys of Prescription Ingredients with the number of occurrences of each ingredient per definite number of prescriptions have been made on a number of occasions at least as far back as the 1880's.

Such a survey, made by Hallberg and Snow in 1898 covered 117,000 prescriptions from 28 states. The compilation of the data was splendidly done, but unfortunately has never been published.

A similar survey of national character is recorded in the Charters' Report in 1925. This survey covered but 17,500 prescriptions but these were gathered from over the country and were read until practically no new items occurred in a block of 500 prescriptions.

Professor Cook, Chairman of the U. S. P. Revision Committee undertook a survey in 1929–1930 of those items only that had been deleted from U. S. P. VIII and U. S. P. IX. This survey represents 237,000 prescriptions from about 500 stores throughout the nation and covers about 400 items.

The results from each of these surveys have been studied and careful comparisons made. This information has been used in considering admission to the National Formulary. However, certain discrepancies brought out by these comparisons have lead to a plan for yet another survey, even more extensive and comprehensive and, that should give a truer picture of the usage of medicines in prescriptions in the United States. Such a survey is now under way and is being financed jointly by the Board of Trustees of the U. S. Pharmacopœia and the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION.

A *survey of the use of medicines in hospitals* should be made. Such a survey presents many difficulties, for in most hospitals no record is kept of the amount of medicines dispensed in the hospital. Some hospitals have dispensaries where regular prescription files are kept, others have files of "orders," but in most hospitals no record is kept of the medicine used by the nurses. However, it has been estimated that perhaps one-fourth of all the medicine ordered by physicians in the United States is dispensed in hospitals.

The amount and kind of *medicines dispensed by physicians*, also, is not known. Prof. Cook has made a study of the formulas in the catalogues or price lists of physician-supply houses and finds that about 85% of the items in these formulas are U. S. P. items.

Finally, no figures are available on the *use of medicines in "patent" medicines*. Certainly the amount used here must be very large.

A tabulation of the *imports* of *crude drugs, medicinal chemicals* and *medicines* might throw much light on the extent of use of certain items of medicine.

ADMISSIONS INTO N. F. VI.

The admissions into N. F. VI, as with the Pharmacopœia, require a vast amount of study.

There are three sources of admission to National Formulary VI, *viz.:* the items of N. F. V, the deleted items from U. S. P. X, and new or unofficial items.

The Committee, early in its work, decided to base admissions on extent of use, and determined to find out, if possible, just how much each preparation was used by physician, pharmacist or layman before it was passed upon for admission to N. F. VI.

The titles in Part I of N. F. V have been considered at both of the annual conferences of the Committee and about 350 of them have been definitely admitted to N. F. VI. About 30 titles are still under consideration and about 200 are tentatively in the deleted group.

The items of Part II rather automatically follow those in Part I: if the preparation in Part I is admitted, the drug or chemical in Part II is also admitted. In this way, 130 of the 213 items in Part II are admitted and 10 are still under consideration.

About 40 preparations of U. S. P. X have been deleted by the U. S. P. Committee on Scope, and most of these, no doubt, will find their way into the N. F.

Several hundred new preparations have been proposed for admission to N. F. VI. These are being studied as to their extent of use and perhaps a considerable number will be admitted to N. F. VI. The Committee has already taken favorable action on the admission of ampuls in increased number and is considering adding more tablets. Several good elixirs and ointments have been proposed, as well as a wide range of other preparations.

When the deletions are definitely passed upon, the list will be extensively published and comments and criticisms will be invited.

THE STUDY OF INDIVIDUAL MONOGRAPHS.

The Sub-Committees have been giving much thought to the individual monographs, but no actual copy of a revised monograph has appeared during the year in any of the Sub-Committee Letters. However, according to the reports of the Sub-Committees made at the last Conference, several of the Sub-Committees are now prepared to issue the revised copy of a considerable number of monographs, and it is expected that these will appear in the Sub-Committee Letters within the next month or so.

E. N. GATHERCOAL, *Chairman.*

Referring to the Maryland Prescription Survey Mr. Swain said he would not read the statistical report, which, as a whole will probably take the usual course. He stated that the Survey was undertaken to stimulate pharmacists of the state in building up their prescription departments. It was, therefore, necessary to get statistics as nearly accurate as possible to assist them. The working conditions were fortunate, with the splendid coöperation on the part of the state pharmacy officials, a coöperation not available to surveys carried on in other states because, in Maryland, Dr. E. F. Kelly is a member of the Maryland State Board of Health, and he (Dr. Swain) is honored with the duties of enforcing the drug laws of the state. Naturally, it was not a very great burden when the assistance of state pharmacy officials could be enlisted in the work.

He stated that the Maryland population is mostly urban; the urban population of the whole of the United States at the last census comprised 56 per cent of the population, while in the state of Maryland 59 per cent of the population is classified as urban. As the urban population of Maryland compares so closely with the urban population of the country as a whole, it can reasonably be assumed that the figures obtained in the Maryland survey can be used as a basis for arriving at a fairly accurate national prescription count.

Continuing the reporter said that the Maryland Prescription Survey was carried out by the Maryland Pharmaceutical Association in conformity with the pharmacy laws of the state of Maryland and under the supervision of the Bureau of Pure Food and Drugs.

The first thought in mind was that carrying out a national survey would give our figures official recognition—a representative was sent to Washington and submitted the entire plan to the Census Bureau, at the same time asking for certain information in possession of the Bureau. The Bureau approved certain features of the plan, and recommended the modification of others, but refused to give all the information which we requested; therefore, the survey was begun as a state count only, with the aid of the proprietors of stores; the number of prescriptions filled were checked and then re-checked in order to prevent errors. The results of this survey indicate that a great many errors exist in the methods of keeping records and also of other information which pharmacists should have on hand. A great many of the stores kept no record of their prescription business at all; some stores kept fairly accurate records. Many of the owners had been operating their stores for years, and during all this time they had kept no record of their prescriptions, with the result, of course, that when asked for this information it was not available.

In the opinion of the reporter, with a little effort on the part of others, the keeping of records would be improved in such a manner that all matters regarding prescription practice may be instantly available. He contended that the matter of record-keeping is very important from every standpoint and no pharmacist can really be successful if his records are poorly kept. He reported an interesting event during the survey—"In a certain drug store which had a prescription business of $18,000 a year and the gross prescription sales of which amounted to $36,000, no records were kept. The owner, in fact, became indignant when he was told of the necessity of keeping accurate records, but he finally became so interested in the work of the survey that he insisted upon using his store as a laboratory in which to carry on the work.

Another feature, important for those who like statistics, and which also helped considerably in this work is that in the state of Maryland the city population practically is the same as that of the country, the city population being 804,000 against 826,000 for the rest of the state.

S. L. Hilton inquired whether the reason for the difference in the number of prescriptions compounded in the city of Baltimore as compared with the number compounded in the rural districts was not due to the fact that physicians in the rural districts supply the medicines to their patients. Mr. Swain replied that he was not certain about this and presented some figures from the survey. He said that it was possible to gather a great many facts which will be available. He was quite certain that there was less compounding by physicians in the cities than in the country districts.

C. P. Wimmer stated that a survey in New York for 1930 showed an increasing number of prescriptions; this increase seems to have dropped somewhat.

Mr. Swain stated that the public is becoming just as careful to-day in the selection of the pharmacist as in the selection of the physician and in his opinion the public would pass judgment according to their observation and express their preference by patronage and, in his opinion, this accounted, to a certain extent, for some stores doing a very large prescription business.

The next order of business was a reading of the report of the Committee on Unofficial Standards by J. C. Krantz, Jr. On motion duly seconded the report was accepted. The report follows:

REPORT OF THE COMMITTEE ON UNOFFICIAL STANDARDS.

Last year in the annual report of this committee Professor Gathercoal tendered his resignation as chairman to the Council of this ASSOCIATION. Under his administration the work of the committee on Unofficial Standards was carried on with wisdom and expedition. With regret the Council accepted the resignation of Professor Gathercoal and John C. Krantz, Jr., was elected chairman of this committee.

ORGANIZATION.

Prof. E. B. Fischer retained his position as chairman of the Sub-Committee on Crude Drugs of the general committee, and Dr. H. H. Schaefer was appointed chairman of the Sub-Committee on Chemicals to take the place of John C. Krantz, Jr. During the past year, the Council elected Dr. Arno Viehoever to the place of Mr. Eldred on the committee, and Dr. Adolf Ziefle was elected to take the place of Dr. H. H. Rusby. Each of these newly elected members are serving on the Sub-Committee on Crude Drugs.

The personnel of the committee and associate members is as follows:

Sub-Committee on Crude Drugs.—**Members.**—E. B. Fischer, *Chairman*, University of Minnesota, College of Pharmacy, Minneapolis, Minn.; E. N. Gathercoal, 701 S. Wood Street, Chicago, Ill.; O. A. Farwell, 271 Smith Ave., Detroit, Mich.; E. L. Newcomb, 51 Maiden Lane, New York, N. Y.; C. M. Sterling, 920 Indiana Ave., Lawrence, Kansas; Adolf Ziefle, Corvallis, Oregon; Arno Viehoever, 43rd and Kingsessing Ave., Philadelphia, Pa.; H. W. Youngken, Mass. College of Pharmacy, Boston, Mass.

Associate Members.—William Mansfield, P. O. Box 137, Delmar, New York; A. J. Schwarz, University of Tennessee College of Medicine, Memphis, Tennessee; Thomas G. Githens, M.D., Glenolden, Pennsylvania; H. H. Crosbie, 307 West Pratt Street, Baltimore, Md.; E. H. Wirth, % J. A. Dorjhan, 701 S. Wood St., Chicago, Ill.; B. V. Christensen, University of Florida, College of Pharmacy, Gainesville, Florida.

Sub-Committee on Chemicals.—**Members.**—H. H. Schaefer, *Chairman*, 115 W. 68th, St, New York, N. Y.; J. A. Koch, 1431 Blvd. of the Allies, Pittsburgh, Pa.; E. V. Lynn, Bagley Hall,

University of Washington, Seattle, Wash.; Otto Raubenheimer, 1341 Fulton St., Brooklyn, N. Y.; John G. Roberts, 137 N. Rolling Road, Springfield, Pa.; E. S. Rose, Box 182, Iowa City, Iowa; W. F. Sudro, 1117 Thirteenth St., N., Fargo, North Dakota.

Associate Members.—L. E. Warren, F. D. I. Administration Department of Agriculture, Washington, D. C.; Nellie Wakeman, 356 Chemistry Building, Madison, Wis.; F. W. Nitardy, 23 Vine Street, Brooklyn, New York; E. H. Volwiler, Abbott Laboratories, North Chicago, Ill.; A. D. Nichols, 43rd and Kingsessing Ave., Philadelphia, Pa.

ACTIVITIES.

1. The committee offered its services to the National Formulary Committee to assist it in the preparation of monographs.

2. Five monographs were prepared by the Sub-Committee on chemicals and were published in the April number of the JOURNAL OF THE ASSOCIATION.

These chemicals are: Zinc Phosphide, Bismuth Subiodide, Hydrated Bismuth Oxide, Cerium Oxalate, Methanol.

3. The Sub-Committee on crude drugs has in the process of preparation several monographs which will be published in the coming year.

PLANS FOR FUTURE WORK.

The committee in planning its future work invites the suggestions from ASSOCIATION members interested in the establishment of standards. It is our purpose in the coming year to project our preparation of monographs and standards to some of the newer and more generally used unofficial drugs.

Respectfully submitted,

JOHN C. KRANTZ, JR., *Chairman.*

The report on the Pharmaceutical Recipe Book by Chairman J. Leon Lascoff, was read by C. P. Wimmer.

REPORT OF THE COMMITTEE ON RECIPE BOOK.

Your Chairman begs to submit the following report on the Recipe Book, for the year 1930–1931:

An outstanding activity in connection with the Recipe Book during the past year, was the printing and distributing of circulars advertising this publication. I submit herewith a summary of sales thus far. The definite effect which these pamphlets had in increasing sales is indicated in these figures.

Quarter Ending	
June 1, 1929	1036
Sept. 1, 1929	613
Dec. 1, 1929	249
Mar. 1, 1930	218
June 1, 1930	90
Sept. 1, 1930	205
Dec. 1, 1930	178
Mar. 1, 1931	527
June 1, 1931	350
Total sold to June 1, 1931	3466
Stock on hand as of June 1, 1931 was	1445

Five thousand of the pamphlets were distributed through Secretary Kelly's office. Your Chairman personally distributed five hundred pamphlets to members of the New York State Pharmaceutical Association. It is significant to note the marked advance in sales for the quarter ending March 1, 1931 and continuing to the June 1, 1931 quarter, as compared with the sales of previous quarters. The pamphlets were sent out during the latter part of February 1931.

It is gratifying to note the many letters from pharmacists, and from physicians as well, expressing satisfaction with the Recipe Book. Space does not permit of my quoting all of them, Permit me to mention a few. One pharmacist writes, "This is a fine book which paid for itself during the first week." One particularly interesting letter came from a Dr. Brundage, a physician, in which he states that he "is much impressed by the character, scope and practical and carefully tested compilation of valuable formulas comprising the A. PH. A. Recipe Book." The following is quoted from a letter sent to Secretary Kelly by the J. B. Lippincott Company, publishers of our book: "You are to be congratulated on the splendid booklet prepared on the Recipe Book. We are continually circularizing the 60,000 druggists in this country and can use a large quantity of the booklet to good advantage. Suppose you send us 15,000 of this circular and we will use them during April and May."

We are very grateful for suggestions which have come in from time to time with reference to formulas and other features which might be added to the book. One or two individuals wrote in asking the reason for omitting mention of therapeutic action of the various preparations. From the tone of their letters they evidently had in mind the utilizing of one or another Recipe Book formula to make up preparations of their own. Your Chairman wrote to these parties to the effect that the Recipe Book is intended as an aid to physicians in their prescription writing and to pharmacists as a convenient reference in filling physicians' orders. Furthermore any information as to therapeutics would invite counter-prescribing, which is decidedly contrary to the ethics of this ASSOCIATION.

Your Chairman has already initiated the work of revising the First Edition. In this connection, the following letter was sent to each member of the Committee requesting general suggestions for additions, deletions, corrections, etc.:

DEAR .....:

The latest figures which I have on hand listing sales of the Recipe Book are those up to and including the quarter ending March 1, 1931. Up to this time 3116 copies were sold, leaving a stock on hand of 1795 copies. Of course, the June 1 figures will show additional sales.

It is significant to note that for the quarter ending March 1, a far greater number was sold than during any other period with the exception of the first quarter, when sales started. The reason for the marked increase for the March, 1931 quarter was undoubtedly a result of the distribution of the pamphlets advertising the Recipe Book. I enclose herewith a copy of same.

From these facts you will no doubt conclude that it is time for our Committee to start work on revision of the First Edition.

Will you, therefore, please submit to me whatever criticisms, changes, and new formulas you wish to have considered by the Committee at large for acceptance in the Second Edition of the Recipe Book? I will experiment on same and forward them to each member for approval.

At this time I list below a number of formulas which have come to me from various sources and which are worthy of consideration. Additional ones will be submitted from time to time.

POISON IVY LOTION (DR. SMITH).

Zinc Oxide	3.0 Gm.
Magma Magnesiæ	3.0 Gm.
Glycerine Lubricant, R. B. No. 1 *ad*	30.0 Gm.

SPIRITUS ACIDI FORMICI (FORMERLY N. F. IV).

(SPIRITUS FORMICARUM, SPIRIT OF ANTS.)

Formic Acid	40.0 cc.
Distilled Water	225.0 cc.
Alcohol *q.s.ad*	1000.0 cc.

RUGGLES TINCTURE.

Tincture Iodine	6.0
Spirit of Camphor	25.0

The following formulas are taken from a collection published by me in the "Questions and Answers" column of the *New York Journal of Pharmacy*, of the Columbia University College of Pharmacy. These are formulas which have been requested of me by pharmacists over the phone, and which are not generally available.

PUSEY'S CALAMINE LINIMENT.

Powdered Tragacanth		4.0 Gm.
Phenol		
Glycerin	*aa*	0.6 cc.
Olive Oil		120.0 cc.
Distilled Water *q.s.* to		480.0 cc.
Oil of Bergamot *q.s.* to perfume		

SYRUP OF CHLORAL (B. P.).

Chloral Hydrate	51.0 Gm.
Distilled Water	60.0 cc.
Syrup *q.s. ad*	300.0 cc.

MUCILAGE OF SALEP.

Powdered Salep 1 part

Agitate well with 10 parts of cold water; pour on this 90 parts boiling water, and stir till cold.

SIPPY POWDERS.

Powder *A:*

Heavy Magnesium Oxide	
Sodium Bicarbonate of each	0.6 Gm.

Powder *B:*

Calcium Carbonate	0.6 Gm.
Sodium Bicarbonate	2.0 Gm.

(The above powders are usually taken alternately.)

VINUM FERRI (WINE OF IRON CITRATE, N. F. IV).

Iron and Ammonium Citrate	40.0 Gm.
Tincture of Sweet Orange Peel	60.0 cc.
Syrup	100.0 cc.
Sherry Wine *q.s.ad*	1000.0 cc.

LIQUOR MORPHINÆ HYDROCHLORIDI (B. P.).

Morphine Hydrochloride	1.17 Gm.
Diluted Hydrochloric Acid	2.4 cc.
Alcohol	30.0 cc.
Distilled Water *q.s.ad*	120.0 cc.

(11 minims contain $^1/_{10}$ gr. morphine hydrochloride.)

ELIXIR TURNERA (N. F. III).

Fluidextract Turnera	150.0 cc.
Purified Talc	15.0 Gm.
Alcohol	250.0 cc.
Glycerin	65.0 cc.
Aromatic Elixir	535.0 cc.

Allow to stand 24 hours, with occasional shaking if convenient, and filter.

LIQUOR ROSÆ DULCIS.

Oil Rose	0.5 cc.
Carmine	8.0 Gm.
Potash Solution	16.0 Gm.
Glycerin	30.0 cc.
Alcohol	16.0 cc.
Syrup *q.s.ad*	300.0 cc.

LOOMIS DIARRHŒA MIXTURE (N. F. III).

Tincture Opium	16.5 cc.
Tincture Rhubarb	8.25 cc.
Comp. Tr. Catechu	50.0 cc.
Oil of Sassafras	1.25 cc.
Comp. Tr. Lavender *q.s.* to	125.0 cc.

I am also including the following formulas presented in my report of last year:

DORANTI'S SOLUTION.

Iodine	1 part
Guaiacol	2 parts
Creosote	5 parts
Glycerin	100 parts

CALENDULA OINTMENT.

Fluidextract Calendula	10.0
Simple Onitment *ad*	100.0

MENTHOL LINIMENT.

Menthol	3 parts
Chloroform	4 parts
Olive Oil *ad*	16 parts

CALAMINE OIL LOTION.

Calamine	12.5 Gm.
Zinc Oxide	12.5 Gm.
Lime Water	50.0 cc.
Olive Oil	16.6 cc.
Rose Water *ad*	100.0 cc.

CREOSOTE AND CARBOLIC INHALANT.

Creosote	
Carbolic Acid, of each	6.3 cc
Tincture Iodine	12.5 cc.
Alcohol *ad*	100.0 cc.

AFTER-SHAVING LOTION.

Alum	0.18 Gm.
Glycerin	11.0 cc.
Witch Hazel	16.0 cc.
Perfumed Spirit (Spiritus Odoratus) *ad*	100.0 cc.

AROMATIC SYRUP OF CASCARA.

Fluid extract of Cascara Sagrada	8 parts
Tincture of Orange	2 parts

Alcohol	1 part
Cinnamon Water	3 parts
Syrup	6 parts

ATROPINE OINTMENT.

Atropine Alkaloid	2.0 Gm.
Olive Oil	8.0 cc.
Lanolin	45.0 Gm.
White Petrolatum *q.s.ad*	100.0 Gm.

IODIZED PHENOL (PIGMENTUM PHENOL IODATI).

Iodine	10.0 Gm.
Liquefied Phenol *ad*	100.0 Gm.

As stated in my Committee report for the year 1929–1930, I would suggest the inclusion of a Table of Solubilities and a Dose Table, together with Antidotes for Poisons. The Table of Solubilities should include not only the chemicals or drugs official in the U. S. P. but also those synthetic chemicals which are in daily use in every pharmacy. A similar table prepared by your Chairman, was published in the *American Druggist* and in the "American Druggist Green Book."

There are also various typographical errors which were called to my attention, and which I shall submit later.

As soon as the suggestions come in from the Committee members, an organized, methodical system of revision will be instituted. Comments relative to the next edition are of course invited from all members of the ASSOCIATION and from anyone interested. These will be gratefully accepted and given the proper consideration.

I wish to thank Secretary Kelly and Editor Eberle for their sincere and painstaking work in connection with the printing and distributing of the pamphlets mentioned previously in this report. This advertising medium has paid for itself many times over, by their marked effect in increasing sales of the Recipe Book.

I also wish to thank once more all of the members of the A. PH. A. who have shown their interest and coöperation in our work in behalf of the Recipe Book.

Respectfully submitted,

J. LEON LASCOFF, *Chairman.*

The report of the Committee on Glass Standardization was read by Chairman H. V. Arny. The report will be printed in this and the succeeding number of the JOURNAL.

The report of the Committee on Ebert prize was made by Chairman Loyd E. Harris. It follows:

REPORT OF COMMITTEE ON EBERT PRIZE.

Mr. Chairman, Members of the Section:

After careful consideration of the many papers eligible for the award, your committee has selected Dr. H. W. Younken as the winner of the Ebert prize. This selection was based on his outstanding papers presented on "The Pharmacognosy, Chemistry and Pharmacology of Viburnum."

Respectfully submitted,

F. J. BACON
MARVIN R. THOMPSON
LOYD E. HARRIS, *Chairman.*

Dr. Youngken expressed his appreciation of the award.

On motion duly seconded and carried the session was adjourned.

SECOND SESSION.

The Second Session of the Scientific Section was called to order on Thursday, July 31st, at 2:00 P.M., by Chairman E. E. Swanson.

The report of the Committee on Review of Papers was called for.

REPORT COMMITTEE ON REVIEW OF PAPERS.

Chairman Jenkins stated that this Committee was for the purpose of reviewing papers as to whether they should be published or not and that as no papers have been submitted with that end in view it was recommended that the Committee be discontinued.

On motion duly seconded the report of the Committee was accepted and carried by vote.

The reading of papers was continued.

"The Standardization and Stabilization of Ergot Preparations. VIII. The Study of Methods of Assaying Ergot Preparations and the Hydrogen-Ion Concentration Factor," by E. E. Swanson, C. E. Powell and A. N. Stevens.

"Pitocin and Pitressin Stability," by L. W. Rowe.

"Influence of the Alkaloidal Purification Procedure in the Assay of Alkaloidal Drugs," by George E. Éwe.

"Influence of Vegetation and Development of Plant on the Alkaloidal Content of Hyosciamus Niger L," by Zdenek F. Klan, Prague.

"The Phytochemistry of Podophyllum Peltatum," by Arno Viehover and Elsie M. Klenke.

"Transparent Life Studies;" "Effect of Strychnine on Daphnia," by Arno Viehover and Anna Schwenk Mikuriija.

"The Alkaloids of Argemone Alba Lestib," by P. A. Foote.

"On the Occurrence of Azulene in Achillea Millefolium," by Katherine Graham and Edward Kremers.

"A Revision of Oxygen Derivatives of Cymene," by S. Chechik, W. W. F. Enz and Edward Kremers.

"A Chemical Study of Corydalis Aurea, Wild," by H. F. Eppson and Edward Kremers.

"Fluidextract of Ergot," by L. W. Rowe and W. L. Scoville.

"Detection of Toxines Which May Be Formed from Cinchona Alkaloids," by S. J. Dean, J. W. Miller and H. C. Biddle.

"Rape Oil as an Adulterant of Olive Oil," by C. W. Ballard.

"Quality of Spearmint Oil Produced in Florida," by B. V. Christensen and L. D. Hiner

"Incompatibilities of Important Newer Chemicals," by Charles F. Lanwermeyer.

"The Assay of Pepsin," by Glenn L. Jenkins and H. L. Greenberg.

"A Study of the Germicidal Activity of Aromatic Sulphides," by E. Moness, W. Braker and W. G. Christiansen.

"A Comprehensive Study of the Preparation of Colloidal Silver Iodide and a Report of Its Bactericidal and Bacteriostatic Value," by W. A. Lott and W. G. Christiansen.

"A Note on the Titration of Boric Acid," by John C. Krantz, Jr., and C. Jelleff Carr.

"The Stabilization of Solution of Arsenous and Mercuric Iodide, U. S. P. X," by William J. Husa.

"The Analysis of Arsenous Iodide," by William J. Husa.

"The Relation of Hydrogen-Ion Concentration to Potency in Tincture of Digitalis," by John C. Krantz, Jr., and James C. Munch.

"The Effect of Various Iodides upon the Stability of Hydriodic Acid," by W. J. Husa and P. S. Shattuck.

"A Note on the Assay of Tincture Ferric Chloride," by Margarethe Oakley and John C. Krantz, Jr.

"Tincture and Fluidextract of Digitalis," by L. W. Rowe and W. L. Scoville.

"A Note on the Assay of Spirit of Ethyl Nitrite," by W. F. Reindollar and John C. Krantz, Jr.

"Fluidextract of Ergot," by L. W. Rowe and W. L. Scoville.

"Alkaloidal Reagent. I. Preparation and Method of Use," by James C. Munch, Frank Crossley and Walter H. Hartung.

"Alkaloidal Reagents. II. Systematic Study of the Reaction of Phenols and Amino-Phenols," by James C. Munch, Frank Crossley and Walter H. Hartung.

"Studies on the Determination of Camphor in Camphor Liniment," Charles F. Poe, Goldner Lipsey and David W. O'Day.

"Effect of Ordinary Light and Ultra Light on Extracts of Essential Oils in (1) Alcohol, (2) Fixed Oils," by Charles F. Poe, E. C. Jones and Ford Millikin.

"A Proposed Method for Determination of Camphor in Spirit of Camphor," by Charles F. Poe and Elmer Plein.

"Resin of Ipomea," by L. E. Warren.

"The Hydrogen-Ion Concentration of the Infusion of Digitalis," by John C. Krantz, Jr.

"A Physical Chemical Study of Solution of Magnesium Citrate," Margarethe Oakley and John C. Krantz, Jr.

The report of the Committee on the Chairman's Address was read by Chairman William J. Husa, it follows:

REPORT OF THE COMMITTEE ON CHAIRMAN'S ADDRESS, SCIENTIFIC SECTION.

Your Committee has carefully considered the excellent address of the Chairman.

We approve suggestions one and three, that an auxiliary committee be appointed to assist the Editor of the JOURNAL OF THE A. PH. A., in the selection and criticism of papers offered for publication in the five subdivisions of (*a*) chemistry, (*b*) bacteriology, (*c*) pharmacognosy and botany, (*d*) pharmacology and bioassay and (*e*) pharmacy.

We also approve suggestion two, that the auxiliary committee be selected from educational institutions and that the committee shall be made up of individuals who are considered as authorities in their respective fields.

We likewise approve the fourth and final suggestion that the names of the members of the auxiliary committee with their respective subdivision be published in a prominent part of each issue of the JOURNAL. Your Committee recommends that the suggestions be adopted by the Section and referred to the House of Delegates.

Respectfully submitted,
WILLIAM J. HUSA, *Chairman*
MARVIN R. THOMPSON
RALPH E. TERRY.

There was some discussion on the matter of the selection of the Auxiliary Committee. Chairman Swanson thought the committee should be composed of members connected with educational institutions; others differed. L. E. Swanson thought no discrimination should be made, and the editor select the reviewer he believes best qualified. He thought the name of the reviewer should be omitted. This was put in the form of a motion and carried. (According to the reporter—it was to be placed before the House of Delegates.) The report of the Scientific Section as placed before the House of Delegates reads:

"*To the House of Delegates:*

The Scientific Section held two sessions on Wednesday and Friday afternoon, respectively, and a Joint Session with the Section on Practical Pharmacy and Dispensing on Thursday evening. Seventy-one papers were listed on the printed program for presentation at the two sessions and a total of 38 were actually read, the remainder being given by titles and referred for publication.

New officers elected for the coming year are as follows:

Chairman, L. E. Warren, Washington, D. C.
First Vice-Chairman, W. J. Husa, Gainesville, Fla.
Second Vice-Chairman, A. R. Bliss, Jr., Memphis, Tenn.
Secretary, L. W. Rowe, Detroit, Mich.
Delegate to House of Delegates, E. E. Swanson, Indianapolis.

Respectfully submitted,
L. W. ROWE, *Secretary*."

(See September JOURNAL, page 993.)

The report of the Committee on Nominations was read by Chairman Bibbins, reporting the Nomination of L. E. Warren of Washington as *Chairman*, Wm. J. Husa, of Gainesville, Fla., *Vice-Chairman*, and L. W. Rowe was renominated for *Secretary*. The Committee at the same time commended his services. On motion duly made and seconded the nominees were elected.

Chairman Swanson expresses his thanks for the coöperation he had received and installed the *Chairman-elect*, the *Vice-Chairman* and the *Secretary*. Chairman Warren thanked the members for the honor of his election.

On motion duly made and seconded the session was adjourned.

THE SECTION ON EDUCATION AND LEGISLATION.

The First Session of the Section on Education and Legislation was called to order by Vice-Chairman Rudolph Raabe, Wednesday, July 29th, at 2:30 P.M. Chairman B. V. Christensen took the chair. He announced the appointment of the Committee on Nominations, as follows: *Chairman*, A. B. Lemon, C. W. Ballard, R. A. Lyman. Chairman Christensen stated that the Secretary had sent in no report and that the work during the year had been done by him with the assistance of the vice-chairman, Rudolph Raabe. He asked Mr. Raabe to take the chair while he read the annual address. This follows:

ADDRESS OF THE CHAIRMAN OF THE SECTION ON EDUCATION AND LEGISLATION.

A Century of Progress in Pharmaceutical Education.*

BY B. V. CHRISTENSEN.[1]

The progress in pharmaceutical education and the raising of the standards of pharmaceutical practice have been the leading causes in the development of pharmacy to the status as it exists to-day. The time has long since past when anyone, whether he had training or not, could open and operate a drug store without leave or license.

A century ago it was the custom of physicians in this country not only to compound and dispense but in many cases to manufacture as well. In those days the drug stores were patronized by physicians largely as sources of supply for the crude drugs required for manufacturing. In the early days of the past century in some of the larger cities of the United States were found a few trained apothecaries who had emigrated from the Old World where means for pharmaceutical education had been provided. The better class of physicians were glad to turn to such men for assistance and in turn gave them every possible encouragement. It is to the foundation laid by such influences that pharmaceutical education in this country owes its origin and advancement.

INDEPENDENT COLLEGES.

The first attempts to provide education for pharmacists in this country were made by corporations of local druggists called colleges, probably due to the influence of the trained apothecaries from Europe. These colleges were not only organized for the improvement of their calling but for mutual protection as well. This is well illustrated in the case of the first college, namely, Philadelphia College of Pharmacy, organized in 1821. This was evidently stimulated by an attempt on the part of the medical faculty of the University of Pennsylvania to regulate the education and practice of pharmacy in Philadelphia, which resulted in a counter movement by the local druggists and the organization of the Philadelphia College of Pharmacy (1). Similar colleges were organized in other large cities such as Massachusetts College of Pharmacy in Boston, 1823; College of Pharmacy of the City of New York, 1829; Maryland College of Pharmacy, Baltimore, 1841; Cincinnati College of Pharmacy, 1850; Chicago College of Pharmacy, 1859 and St. Louis College of Pharmacy, 1864.

These colleges were what might be called evening or vocational schools, *i. e.*, instruction consisted of evening lectures given by practicing physicians and pharmacists and was intended to supplement that given to apprentices in the drug stores. Libraries were built up, museums established and journals, such as the *American Journal of Pharmacy*, 1829, were published as a part of the work of these colleges.

These colleges were primarily responsible for the organization of the American Pharmaceutical Association. This means, of course, that the better class of druggists was responsible. In August 1851, the New York College of Pharmacy invited the other colleges to send delegates to a convention to meet October 15th to consider means for securing legal control over the importation of European drugs. After attending to the matters for which this convention was called, resolutions were adopted recommending that a convention be called to meet in Philadelphia in October 1852, for the purpose of organizing a national association of druggists. This was done and hence, the American Pharmaceutical Association.

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* Miami meeting, A. Ph. A., 1931.

[1] Professor of Pharmacognosy and Pharmacology, University of Florida.

STATE SUPPORTED EDUCATION.

It appears that the attempts at local control of education and the practice of pharmacy proved ineffective. The AMERICAN PHARMACEUTICAL ASSOCIATION, therefore, urged pharmacists to form state associations to promote their individual interests and advance their professional standing. As a result, organization of State Associations closely followed the organization of the parent association and the organization of State Associations was followed by state legislation controlling the practice of Pharmacy.

The control of pharmacy by the state brought about a very significant change in pharmaceutical education. It appeared to be the attitude that inasmuch as the state required a certain amount of education for the practice of pharmacy, it was the duty of the state to provide such education. Consequently, we find that the establishment of departments and colleges of pharmacy in state-supported institutions closely followed state legislation.

The following tabulation, giving the date or organization of state associations, the date of legislation and the date when pharmaceutical education was first provided by the state, shows the close sequence of organization of state association, legislation and state education (2).

State.	Date of State Association.	Date of First Legislation.	State Pharmaceutical Education Provided.
Michigan	1874	1885	1887
Wisconsin	1880	1882	1883
Indiana	1882	1899	1884
Iowa	1880	1880	1885
Kansas	1880	1885	1885
Ohio	1879	1884	1885
South Dakota	1886	1890	1888
Minnesota	1883	1885	1892
Alabama	1881	1887	1895
Washington	1890	1891	1895
North Carolina	1880	1881	1896
Oregon	1890	1891	1901
Tennessee	1873	1893	1901
West Virginia	1881	1881	1901

Some of the older states in the East have not yet made provision for education in pharmacy, while some states have both state supported and independent schools of pharmacy.

LEGAL RECOGNITION OF EDUCATIONAL TRAINING.

About a century ago it was the custom to train men for the trades and professions on the basis of the apprenticeship system; *i. e.*, a young man who desired to become a pharmacist would enter an apprenticeship agreement with a practicing druggist. After a certain period of study and practical training under the guidance of the druggist he would secure a shop of his own and enter into the profession as a full-fledged pharmacist. This was essentially the general plan followed by the trades and professions. However, with the establishment of trade and professional schools, the apprenticeship system has been gradually modified in some instances and in others entirely displaced. At present we have a combination of educational training and apprenticeship as a prerequisite for practice in some of the trades and professions and in others educational training alone is required.

In this connection it is to be noted, *first*, that the tendency is toward the substitution of educational training for apprenticeship training, *i. e.*, with an increase in educational training there has been a decrease in apprenticeship training. *Second*, the tendency is toward an increase in educational requirements, *i. e.*, the time required to complete an educational course as a prerequisite for practicing a profession or trade is being increased, *e. g.*, the course in Pharmacy was recently increased from a two-year course to a three-year course. *Third*, that where educational training has entirely displaced apprenticeship there is a tendency also to eliminate the state examination.

What is the status of pharmaceutical education with respect to these tendencies? While we have had colleges of Pharmacy since the organization of the Philadelphia College of Pharmacy in 1821, it was not until about 1885 that educational training in this field began to receive legal recognition. Up to 1865 there were only seven colleges of Pharmacy in the United States, all of which were of the so-called independent type. During the period 1883 to 1901, departments of Pharmacy were organized in seventeen State Universities, and coincident with this innovation came the recognition of educational training as equivalent to apprenticeship. Hence, about 1915, it had become the general practice to recognize a year of college work as equivalent to a year of apprenticeship and, therefore, in a state that required four years of drug store experience, for instance, a young man could attend college two years and serve two years apprenticeship and thus become eligible to take the State Board examination. A few years later some states permitted a complete substitution of four years of college work for four years of drug store experience.

About 1920 a definite movement was inaugurated to make college graduation compulsory as a prerequisite for certification as a pharmacist. As a result of this movement, it was reported in April 1931, that 38 states (3) had adopted the college graduation requirement and similar legislation was then pending in other states.

Coincident with this movement, another was inaugurated to increase the college course from a minimum of two years to a minimum of three years. Consequently, in 1923 a resolution was formally adopted by the American Association of Colleges of Pharmacy providing that beginning with September 1925, a minimum three-year course would be required of all member schools or colleges. In this connection it might be mentioned also, that at the annual meeting of the American Association of Colleges of Pharmacy, held at Portland, Maine, in August 1928, a resolution was adopted providing that beginning with September 1932, a minimum four-year course would be required of all members. Many of the colleges have been offering an optional four-year course for several years and there are already eight schools requiring a minimum of four years.

PRESENT TENDENCIES.

Even now before the inauguration of the minimum four-year course, there are other educational propositions which have been advanced for consideration, namely (*a*) elimination of the drug-store experience requirement, (*b*) elimination of the State Board examination and (*c*) the five-year minimum undergraduate course.

There are now some states that permit a complete substitution of college graduation for drug store experience and others that permit a complete substitution of four years of college work for four years of drug store experience. The argument is advanced that if a prospective pharmacist is to be required to spend four years in college, he should be eligible to take the state examination upon graduation. At a joint session of the American Association of Colleges of Pharmacy and the National Association Boards of Pharmacy in 1930, a motion was adopted that the joint meeting approve "that at least twelve months' practical experience in a drug store under the supervision of a registered pharmacist be required for registration (4)."

There are some who believe that graduates of a four-year course in a state-supported college of pharmacy should be automatically certified as registered pharmacists just as graduates of state-supported law schools are now automatically admitted to the bar. Whether or not these propositions will eventually materialize is a question, but if examinations are not eliminated there will undoubtedly be a radical change in the character of the examination.

That the completion of the Junior College be the next prerequisite was suggested by Dean Wulling in a paper before this section in 1929 and from which I quote: "The five-year minimum undergraduate course is the next objective in pharmaceutical education. It should be the present requirement and would be if all pharmaceutical practitioners and educators valued their profession as the members of other professions, with which pharmacy is on a parity or higher, value theirs. Viewed from the standpoints of practical responsibility and public necessity, pharmacy in its true aspects, is not secondary to medicine and certainly not to dentistry, law, education, theology, business, engineering, etc., all of which in their respective best schools are already on the minimum five-year or higher basis. . . .I venture to predict, on the basis of my faith and confidence in the wisdom and integrity and also in the sagacity and discernment of what is best for pharmacy, of the present and particularly of the coming generation of pharmacists, that the five-year course will become the accepted minimum very soon (5)."

Finally, it must not be forgotten that there are now four colleges of pharmacy that are offering graduate work leading to the degree of Doctor of Philosophy in Pharmacy and several that are offering work leading to the Master of Science degree. This is a significant and important advancement in pharmaceutical education and it is worthy of note that many of those who have been granted the Ph.D. degree have been recruited to the ranks of the teaching profession. This is a fortunate circumstance for it ought to result in higher teaching standards and continued progress in pharmaceutical education.

There are undoubtedly other factors that have influenced the progress of pharmaceutical education in this country but too much cannot be said in commendation of the efforts and influences of the various state and national professional associations. Many men have attributed their individual successes in this field to their memberships in such associations and very likely the power and influence of these associations has been due to this high quality of membership.

The pharmacist is now coming into his own and he is taking his place in the society of scholars. His profession is now regarded as a learned one. There is much of real inspiration in the record of progress in pharmaceutical education during the century just passed. Therefore, it is not for us to rest on the laurels of our predecessors, but it is for us to continue and even surpass, if possible, this record of progress.

BIBLIOGRAPHY.

(1) E. Kremers, *Bibliographic Guide for Students of the History of Pharmacy*, page 49.
(2) *Ibid.*, pages 52, 53, 54.
(3) Jour. A. Ph. A., 20 (1931), 373.
(4) *Proceedings N. A. B. P.*, 1930, page 90.
(5) Jour. A. Ph. A., 19 (1930), 394.

R. A. Lyman asked the Chairman relative to the time when college graduation was made the prerequisite to licensing. It was stated that graduation was required in New York about 1906 or 1907 and in Pennsylvania about 1907.

The status of pharmaceutical education was further discussed and motion made to publish the address, this was unanimously carried.

Chairman Christensen announced the reading of papers. These were taken up in the following order.

"The Next Prerequisite," F. J. Wulling.

"A Course in Pharmaceutical Sundries and Sick Room Supplies," C. W. Ballard.

In discussing the paper by C. W. Ballard, A. B. Lemon stated that he was particularly interested in it, because he remembered well when the subject was prepared for the Charters' Report. He said that pharmacists should have information relative to all things sold in the store and therefore these subjects have a rightful place in the pharmacy curriculum.

The next paper on the program was "Five Years of Intense Testing," by A. B. Lemon.

D. B. R. Johnson inquired whether the author of the paper thought it wise to try the intelligence test on the faculty. In answer Mr. Lemon said that at the institution with which he is connected the subject had been taken up and this has now developed into a kind of clinic on teaching methods.

Dean Johnson said that an efficiency and intelligence test was employed at the University of Oklahoma, also, that the state employs a man who visits the high schools with a view of applying the intelligence test in a general way; it has been found that this had its value in stimulating the interest of the students.

Dean Dandreau stated that he was interested because higher exactions meant that better students were admitted to pharmacy schools.

Dean Lyman said that the higher requirements encouraged a better class of students to enter pharmacy. He inquired of the author of the paper what effect it would have on the students to advise them of their standing as far as the intelligence test is concerned, especially the psychological effect.

Mr. Lemon replied that they did not inform the students unless it was requested. He did not feel that the plan had met with the success that he had hoped for.

Dean Raabe inquired relative to the effect on the members of the faculty. The author stated

that it was an easy matter to find instructors for the slow sections of the student body but it was more difficult to find the instructors for the more alert.

The next paper was on "Student Activities in the College of Pharmacy," by H. C. Biddle.

Other papers were read by title and in abstract, as follows:

"The Pharmacist in the Federal Civil Service," by Paul G. Thomas.

"Microbiology *vs.* Bacteriology," by Fanchon Hart.

The First Session of the Section on Education and Legislation was then adjourned.

SECOND SESSION.

The Second Session on Education and Legislation was called to order by Chairman B. V. Christensen, on July 30th, at 8:10 P.M.

The reading of papers was continued.

The first one on "California Junior Capper Kelly Bill," by W. Bruce Philip and Fayetta W. Philip.

Mr. McCollum asked whether the manufacturing of new brands of preparations was started by this measure. The author answered that new brands may be started. He said that manufacturing firms were taking advantage of the bill.

Dean Dandreau realized the difficulty of having such a measure passed, and that it was gratifying to note California has made a step forward.

New York Pharmaceutical Association has gone on record favoring a bill somewhat similar to the California measure.

J. W. Slocum inquired whether any druggists were members of the California Legislature. The author replied that there were druggists in the Legislature but there was no dissenting vote. No objection was offered by the chain stores and support was given by a number of trade organizations.

Mrs. Philip said that a number of years ago the druggists in California decided on several measures and made strong efforts to pass them, but there were objectors then, and the legislators advised them that if the druggists would get together and decide on what they want that the Legislature would give favorable consideration—that is the secret of the recent success.

The next paper on the program was entitled "The California Anti-Discrimination Act Enacted in 1931," by W. Bruce Philip and Fayetta H. Philip.

The next paper was entitled "Inspections," by John E. Kramer and read by C. Leonard O'Connell. (Printed in August JOURNAL, page 790.) The next paper entitled "Pharmaceutical Engineering," by Arthur E. Peterson and Robert J. Ruth, was read by A. B. Lemon. (It is printed in the September JOURNAL, pages 912–918.)

The next paper of the program was "Are Beginning Pharmacy Students up to the Standard?" C. B. Jordan and H. G. DeKay. This was illustrated by lantern slides showing averages for the years 1926 to 1927 up to and inclusive of 1929 and 1930.

A. B. Lemon stated that this paper was very much in line with the discussion at the first session of the section. He said that in certain colleges of arts and sciences they have been devoting at least a week to the orientation of their students. This has also been done in certain pharmacy schools. At Buffalo this has been found of value. He endorsed the tests.

Dean Raabe stated that evidently there is quite a difference in the high school training received in different states.

C. W. Ballard asked the author whether the effect on the student was satisfactory; that is did it stimulate him? He thought it had a good effect on some students while on others it had not.

The Committee on Nominations reported the names of officers as follows: *Chairman*, Rudolph H. Raabe; *Vice-Chairman*, Charles W. Ballard; *Secretary*, Charles J. Clayton; *Delegate to the House of Delegates*, B. V. Christensen. In due order the nominees were elected. Following this the Second Session of the Section on Education and Legislation was adjourned.

THE SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The First Session of the Section on Practical Pharmacy and Dispensing was called to order by Chairman R. E. Terry on Thursday, July 30th, 9:00 A.M. Secretary W. Paul Briggs presided during the reading of the chairman's address. Tribute was paid to the memory of Robert J. Ruth, a former chairman of this section. The address of the Chairman follows.

THE ADDRESS OF THE CHAIRMAN.

BY RALPH E. TERRY.

It is my pleasant duty to welcome you to the sessions of the Section on Practical Pharmacy and Dispensing, a very pleasant obligation, and I hope you will find in these meetings much of interest to you, and carry home with you information for practical application.

Pharmacy exists because of the need for the practice of a highly technical art and professional activity. For many years we have had professional pharmacists, few it is true, but well known and very important members of their respective communities. All of us have noted the great increase in the number of these professional stores in the last few years; those who own and conduct these stores are imbued with the idea of the practice of professional pharmacy. This is as it should be, and as long as the members continue in that line of thought, all is well. We are familiar with the slogan, "Cut-Rate" and other methods of advertizing by the "Modern Drug Store," and what they have come to mean during the changes of years.

What problems does the situation present and what are we to do about it? Define clearly what is meant by the term—Professional Pharmacy; established qualifications for its practice. By non-coercive means hold the members of the profession within certain ethical limits. Thus, with these three points discussed, the foundations may be laid for thought along these lines. This is intended as a starting point for further discussion. It is to be realized that all these points advocated may adjust themselves. What the future holds is unknown, but if thought is given and action follows slowly, the tendency is to fulfil the desires.

Taking the first point—"What is Professional Pharmacy?" It would seem that the shortest and most complete definition would be something like this—The practice of the technical art of pharmacy in an ethical manner. Perhaps you do not agree with this, there are many possible additions or modifications which suggest themselves to everyone. We all agree, however, that it is a practice in which we are engaged; it certainly is technical for it not only requires manual manipulation but also scientific knowledge, and the latter is probably the most important. The relationship of the practice of pharmacy as an ethical or as a non-ethical calling can be readily called to mind.

What are the qualifications needed for the practice of the technical art of pharmacy in an ethical manner? There are two very important factors needed and it is rather difficult to say which is most important. One makes for more apparent success while the other is just as important. These two factors are professional skill and personality. The qualifications for the professional skill are perhaps more easily regulated, for we can say how much training an individual must have and trust that during this schooling only the more adept will finish. But the second factor is very difficult, well-nigh impossible to control. And yet in answering the third phase of this discussion a method is suggested—How is it possible by non-coercive means to limit the actions of the members to certain ethical limits? This is the keystone of the whole structure, and it is possible by educating these newer members relative to their obligations. This is not to be effected quickly, but will have to be worked on consistently year after year until it is accomplished. The members of this ASSOCIATION are fitted to teach and impress the doctrine of ethical relationships in the practice of pharmacy. This has been said before, but it seems as if this is a crucial time and there is distinct need for reiteration of these principles and impress the fundamentals. The younger men in the field who have not had the opportunity to come in contact with these important phases should be made acquainted with them so as to regulate their conduct.

This has been all very general; it is the purpose of these statements to bring forth discussion and if possible to formulate means of forwarding the work, if this group thinks the advisability of such a step desirable.

Turning now to the business of the Section it may be pointed out at this time, that considerable time will be available for the discussion of the papers presented and it is hoped that

the members will avail themselves of this opportunity for round-table discussions. In the matter of recommendations, your chairman feels that the following should be offered:

1. The Committee on Glass Standardization through Dr. H. V. Arny feel that they have completed their work as a body and that future research may well be carried on as individual enterprises. It is recommended that the Committee on Glass Standardization be discontinued.

2. It is further recommended that the members of the Committee, particularly Dr. Arny, be accorded a hearty vote of thanks for their splendid work.

At this point I wish to express my appreciation for the assistance I have received from the other officers of the Section, especially Secretary Briggs. It is through his efforts that we are able to present such a group of fine papers as we have here to-day.

The address of the chairman was referred to a Committee consisting of W. G. Crockett, John C. Krantz, Jr., and L. W. Rising. The Committee on Nominations was appointed consisting of John C. Krantz, Jr., *Chairman*, W. J. Husa and William Gray.

The reading of papers was taken up as follows:

"Turbidity Standards for Pharmacopœial Waters and Solutions," by Samuel Claman, C. Jelleff Carr and John C. Krantz, Jr.

"Studies in Filtration of Pharmacopœial Products," by J. C. Krantz, Jr., and C. Jelleff Carr. (Published in August JOURNAL, pages 784–786.)

An illustrated paper on "The Florida Sponge Industry," by Fred H. Heath and Perry A. Foote.

(The slides showed all phases of the sponge industry and are mentioned in the paper to be published.)

The next paper related to "The Preparation of Diluted Hydriodic Acid and Syrup of Hydriodic Acid," by Wm. J. Husa. (The paper is printed in the August number of the JOURNAL on page 759.) Relative to it John C. Krantz, Jr., stated that the Committee on Inorganic Chemicals of the Pharmacopœia had changed the basis of standardization of the diluted inorganic acids from a weight to weight basis to volume basis. That there was considerable discussion on the part of certain manufacturers relative to this change. Personally, he was opposed to omitting formulas for making these preparations.

The next paper was by R. K. Miller, H. G. DeKay and C. O. Lee on "A Proposed Formula for Zinc Oxide Ointment." (It is published on page 779 of the August JOURNAL.)

The next paper was by Robert P. Fischelis on "The Quality of Tincture of Digitalis Dispensed by Pharmacists."

(Owing to the absence of the author the paper was read by title.)

The next order of business was an interesting talk by H. W. Moore on "The Effects of Alochol." Dr. Moore has been working at Tulane University on the subject of "Ginger Paralysis."

The address was deferred until the next session.

Prof. Anton Hogstad delivered an illustrated address demonstrating that professional pharmacy pays. (It is hoped to publish a summary of the address in one of the succeeding issues of the JOURNAL.) The Section adjourned to visit the professional pharmacy of William E. Fossett in Miami.

JOINT SESSION SCIENTIFIC SECTION AND SECTION ON PRACTICAL PHARMACY AND DISPENSING, THURSDAY, JULY 30TH, 8:00 P.M., PROCTER HALL.

To avoid duplication in printing, reference is made to the program of the minutes of the Scientific Section.

SECOND SESSION.

The Second Session of the Section on Practical Pharmacy and Dispensing was called to order by Chairman R. E. Terry, at 2:00 P.M., July 31st. The Chairman announced as the first order of business the illustrated lecture on the "Effects of Alcohol on the Human System," by H. W. Moore of the Bureau of Industrial Alcohol.

Dr. Moore stated that he was delegated to represent Dr. Doran who was in Europe on official business. He acknowledged his inability to fully represent Dr. Doran, whose ability was recognized everywhere. The Bureau of Industrial Alcohol realizes the value of alcohol in industry and for that reason is desirous of assisting the legitimate industry in every way possible.

Dr. Moore stated that up to a few years ago he was assistant chief surgeon for the North-

western railroad and in this work alcohol was used quite freely in accident cases. He remembered also how the uses of alcohol were explained in schools. However, in his opinion it had been proved that alcohol does harm to the human system. He continued his talk along these lines and then explained that industrial alcohol is a necessity for many purposes. The remainder of the lecture was illustrated by lantern slides. (We hope to have the address of Dr. Moore for a later issue of the JOURNAL.)

The next paper of the program was by Frederick Grill on "Microscopic Identification of Ephedrine with Nitrous Acid." The reading of papers was continued as follows:

"An Experimental Study of the Deterioration and Assay of Spirit of Ethyl Nitrite," by M. J. Andrews.

"Solution of Iodine for Germicidal Purposes from the Pharmaceutical Standpoint," by Charles H. LaWall and Linwood F. Tice.

"Solution of Iodine for Germicidal Purposes from the Bacteriological Standpoint," by Lewis Gershenfeld and Ruth E. Miller.

"Solution of Iodine for Germicidal Purposes (from the standpoint of variations in the germicidal properties of iodine solutions imposed by the influence of solvents)," by George M. Karns and George D. Beal.

"A New Iodine Ointment for Antiseptic Purposes." (This paper is printed in the August number of the JOURNAL on page 783.)

The Committee on President's address reported that the recommendations made by the Chairman be submitted in the form of resolutions by the delegate of the Section on the House of Delegates. (See report in September JOURNAL, page 993.)

On motion duly seconded and carried the report was accepted.

The Committee on Nominations presented the following names for officers for the ensuing year: *Chairman*, A. O. Ziefle; *Vice-Chairman*, W. Paul Briggs; *Secretary*, R. E. Terry; *Delegate to the House of Delegates*, I. A. Becker.

In due order the officers named were elected for the ensuing year.

The Second Session of the Section on Practical Pharmacy and Dispensing was then adjourned.

SECTION ON COMMERCIAL INTERESTS.

The First Session of the Section on Commercial Interests was called to order by Chairman Joseph G. Noh on Thursday, July 30th, at 9:30 A.M.

Chairman Noh said that "this year had brought about a number of changes in the commercial aspects of the drug business and due to these changes—brought about, perhaps, because there is not closer coöperation within the divisions of the profession and the drug-trade activities—the drug business has fallen off considerably. This has made us realize that we must be keener in looking after the commercial interests. The coming year will bring about still more changes because of certain elements. The survey being conducted in St. Louis should bring some very good statistics for the retail druggists to profit by. In St. Louis there is a very drastic 'cut price' situation and which, with the survey, should develop interesting data. The survey conducted by W. Bruce Philip in California has brought out some very startling results; in fact, so startling that a great deal of thought has been given the matter and, in my opinion, if he is permitted to go through with his plans we will perhaps have some changes that will be of great importance to the retail drug business of the country. Mr. Philip has said that a large number of druggists have requested that a similar survey be conducted in their respective states. He has also received word from the Canadian Pharmaceutical Association indicating that they are very much interested in the survey. The paper by Mr. Philip is to be presented before the second session of the Section on Commercial Interests and will throw some light on the commercial side of pharmacy which will aid in developing new plans."

The report of Secretary Leon Monell was called for. He stated that there has been considerable difficulty in securing papers for the Section on Commercial Interests this year. He thought, however, that the members would be pleased with the number of responses which have resulted in a very interesting program. He said that Chairman Noh had sent out about 100 letters and almost a like number of replies to these communications. The Secretary had sent

out about a like number and corresponding replies to communications. The replies came from all parts of the country showing that the interest in the Section is national in scope.

Chairman Noh announced as the first paper of the session, that by L. C. Zopf of the University of Iowa on "Why We Teach Principles of Window Trimming at the College of Pharmacy." In the absence of the author Prof. Zada M. Cooper presented the paper. In discussing the paper G. H. Grommet said that in Florida there were many stores without show windows and consequently the wholesale houses in Florida had comparatively few inquiries for window displays.

Paul C. Olsen said that in Philadelphia window displays have become very popular in drug stores, but there has been the difficulty in Florida and California pointed out by Mr. Grommet, that most of the stores had open fronts and no show windows.

Mr. Grommet thought light card board used for displays would, perhaps, be an improvement. In reply Mr. Olsen said that he was fearful light card board would not keep its shape.

Secretary Monell inquired relative to the time of the course in which window trimming was taught. Professor Cooper said that it is required of the freshmen, but it is possible that the course may be extended to the upper classes.

The next paper was by G. H. Grommet on "The Ten Cent Table in the Drug Store." (The paper will be published in a succeeding issue of the JOURNAL and in that connection the discussion, which was quite extended, will be printed.)

The next paper was entitled "Average of Price of Prescriptions in Columbus, Ohio, and Buffalo, N. Y.," by Clarence M. Brown and Leon Monell. The paper is printed in the September JOURNAL, beginning on page 901.

Mr. Grommet inquired relative to the minimum price on prescriptions and asked whether there were any instances of filling the prescription for less than 50¢. He had always maintained that 50¢ is the minimum to be charged for the prescription. Mr. Monell replied that in Buffalo several stores were found that charged as low as 15¢ and the conclusions he had reached were that about 10% of prescription work is charged at a price below 50 cents.

Mr. Brown stated that 10% was a little high. Frequently the doctors tell the patient that the medicine should cost not more than a certain price and if that price is exceeded the patient explains what the doctor had said.

Mr. Grommet stated that it was not right for the physician to make a price for the pharmacist any more than that the pharmacist would make a price on the physician's charges.

C. Leonard O'Connell agreed that the physician should not fix the price on the prescription and he thought the talking point of a pharmacist should be the kind of professional service given to the patient, just as the physician's value is service.

Mr. Grommet stated that conducting a prescription store requires a certain amount of salesmanship just as one devoted chiefly to selling merchandise. When manufacturers send out a detail man they do so after drilling him in sales ability. The pharmacist must sell his services to the public and the physician with a full knowledge of the importance of his services. When physicians are informed relative to the viewpoint of the pharmacist in compounding prescriptions they will understand that a higher charge is made for the protection of the patient and of the physician.

Secretary Monell said that the professional side should always be emphasized.

Chairman Noh stated that this Section of the A. PH. A. is doing a great work in promoting the interests of the retail druggist. Papers of the type discussed bring out many valuable facts by which the retailer profits.

Chairman Noh appointed the Committee on Nominations, as follows: Russell B. Rothrock, Indiana; J. W. Slocum, Iowa; G. H. Grommet, Florida. As members of the Committee on Resolutions, the following: Charles J. Clayton, Colorado; Mrs. Fayetta H. Philip, California; Henry Brown, Pennsylvania.

The first paper, on "Drug Store Survey of St. Louis," by F. A. Delgado of the Department of Commerce, was read by Dr. Charles E. Caspari. (The paper is to be printed in a succeeding issue of the JOURNAL together with discussion thereon.)

The next paper presented was entitled "Is the Manufacturer Coöperating?" by J. W. Slocum. (To be printed with discussion.)

The First Session of the Section on Commercial Intrests was then adjourned.

SECOND SESSION.

The Second Session of the Section on Commercial Interests was called to order by Chairman Noh on Friday, July 31st, at 2:15 P.M. The Chairman announced that the first order of business would be a discussion of the paper read at the First Session on "Is the Manufacturer Coöperating?" (The discussion will be made part of the paper.)

The paper was by W. Bruce Philip on "What Is Substitution from a Commercial Pharmacy Viewpoint?" (To be printed with the discussion.) At the conclusion of the discussion on the paper a resolution was offered which is embodied in the resolution printed in the August JOURNAL, A. PH. A., number 25.

The next paper of the program was by James T. Dumas on "The Manufacturer and Honest Merchandising Conditions." (To be printed with discussion thereon.)

The next paper was on "Merchandising Pharmacy Products Possible," by J. J. Nichols. (The paper was read by title and referred for publication.)

The next paper was entitled, "Drug Store Vocabulary and Department," presented by Mrs. Fayetta H. Ph lip. (To be printed with discussion.)

Tribute was paid to the memory of Robert J. Ruth. The title of a paper by the deceased on "Building Business with Professional Windows" was read by title.

The two following papers were also read by title, "Purdue University Pharmacy Extension Department," by J. L. Weinland, and "Revelations—Some Idea of Stock Control and Turn Over," by George W. Colborne, Jr.

The next paper was by Dr. John L. Dandreau on "Educating Physicians to Prescribe Official Preparations." (To be printed with discussion.)

The following papers were read by title, "Our Best Customer's Baby" and "The Ice Cream Situation," by Samuel Krone.

The next paper was on "Meeting Cut Price Competition," by Wm. Emerich. There was no discussion.

The next paper was by R. W. Rodman on "Radio Merchandising." (Printed in the August JOURNAL, pages 777–779.)

The paper on "Vanishing Profits," by C. Leonard O'Connell was read by title.

Leon Monell then read a paper on "Some Facts Brought Out by the New York Questionnaire on Business Conditions in 1930."

The Committee on Nominations presented the following names as nominees: For *Chairman*, Rowland Jones, South Dakota; *Vice-Chairman*, Leon Monell, New York; *Secretary*, John A. J. Funk, Indiana; *Delegate to the House of Delegates*, Joseph G. Noh. The nominees were elected in due order.

Chairman Noh thanked the members for the honor conferred on him and expressed his thanks for the assistance given him by the Secretary and other members of the Section.

The Chairman then installed the officers-elect.

A rising vote of thanks was given to the retiring officers.

The officers for the ensuing year expressed their appreciation of the honor conferred by the election and promised their best endeavors in making next year's program a success.

Chairman Jones spoke on "The Importance of the Section on Commercial Interests," and asked for coöperation during his term of office.

The Second Session of the House of Delegates was then adjourned.

SECTION ON HISTORICAL PHARMACY.

The First Session of the Section on Historical Pharmacy was called to order by Chairman John Thomas Lloyd on Wednesday, July 29th, at 2:00 P.M. Secretary L. E. Warren presided during the reading of the Chairman's address. It follows:

CHAIRMAN'S ADDRESS.

BY J. T. LLOYD.

Comments Concerning the Origin of the Historical Section of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Although from the beginning the programs of the AMERICAN PHARMACEUTICAL ASSOCIATION often embraced papers of historical interest, for the first half century after its founding,

no effort was made to collect and preserve historical data. With the responsibility resting on no one and only a few realizing the importance of preserving records and materials, much of value was lost with the passing of each generation.

It is perhaps true that the inspiration back of every movement centers in an individual or a small group of individuals of far-reaching vision. Certainly, the beginning of the Historical Section of the AMERICAN PHARMACEUTICAL ASSOCIATION was the outgrowth of the enthusiastic efforts of a few far-seeing men.

Prior to the organization of the Section, Professor Edward Kremers is known to have expressed regret that so important a subject as Historical Pharmacy was not featured by the ASSOCIATION. To him an organization promoting historical interest in pharmacy was not theoretical. In 1897, in Wisconsin, his home state, when the Historical Association formulated plans for the celebration of the State's semi-centennial, it was he who urged the appointment of a committee on pharmacy. One of the splendid results of this effort is the Historical Drug Store in Madison, representing pharmacy in Wisconsin from 1842 to 1898, the first fifty years of statehood.

When the AMERICAN PHARMACEUTICAL ASSOCIATION reached the half century mark and plans were formulated to celebrate the event, Dr. Kremers made a plea for the formation of an Historical Section. As a result, according to the PROCEEDINGS of the ASSOCIATION, 1902:

> "On motion of Charles A. Rapelye, seconded by L. C. Hopp, it was agreed to invite Messrs. Ebert, Kremers and Lloyd to attend the next session of the Council and present their plan for the formation of an historical section of the Association."

However, as some members of the ASSOCIATION believed there was not sufficient interest in historical pharmacy to warrant a separate section, it was therefore—

> "Moved by the Council to recommend to the ASSOCIATION that a standing committee on historical pharmacy be established, to hold one public meeting annually, the committee to consist of a Chairman and Secretary to be named by the President of the ASSOCIATION, and such members of the ASSOCIATION as the Chairman of the Committee may select." (PROC., 1903.)

Accordingly a standing committee on Historical Pharmacy was established. On December 22, 1902, the President appointed Dr. Kremers to preside over this committee. Quoting the words of the Chairman to "the new committee on Historical Pharmacy, called to order in the Casino of the Grand Hotel (Mackinac Island, Mich.) at 8:30 P.M." (August 4, 1903).

> "It was thought best by some that, inasmuch as the proposed work was of the nature of an experiment untried by this ASSOCIATION, a committee might best be appointed. If successful, the committee might later be transformed into a permanent section of the ASSOCIATION."[1]

The first program the committee offered contained ten titles in addition to the Chairman's address. The interest aroused by the "untried experiment" of the Historical program was manifest in the general discussion following the address of the Chairman. This first address, especially the portion coming under the sub-heading, "Suggestions for Work," would to this day be found of service if read by every incoming officer of the Section. At the present time it is especially pertinent in its repeated plea for the preservation of materials and documents that will be of historic interest in years to come.

The surprising success of the Committee in collecting letters, manuscripts, photographs and devices of historic interest is indicated in the minutes of the 1905 meeting.[2] Though the list is too long to enumerate here, mention should be made of the Maisch collection, donated by Mrs. Maisch, and of the Hoffman collection, consisting of "five packages of personal effects," and "eighteen packages of general historical material." We learn that the Historian, Dr. Kremers, spent several hours each day for more than a month of his summer vacation, mounting, classifying and arranging the numerous papers, pamphlets, etc., of this contribution.

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[1] PROC. A. PH. A. (1903), page 531.

[2] *Ibid.* (1905), pages 86–102.

Since the retirement of Dr. Kremers as Historian, the present Historian, E. G. Eberle, has acquired many valuable contributions of historical worth. Each year these have been listed unless they were acknowledged in the JOURNAL OF THE ASSOCIATION. These contributions are all recorded and stored in boxes in the present office of the ASSOCIATION. At present there is no space for their exhibition, and scarcely room for their preservation. But when the time comes for their proper placing and display, they will form a creditable nucleus for a library and museum of pharmacy.

When the work of assembling historical material started, no mention was made nor apparently any thought given to the possibility of the ASSOCIATION ever possessing its own museum. In the Chairman's words[1]—"Should the dream of some of us, *viz.:* a national pharmaceutical museum and library at Washington ever be realized," we find his vision for the future.

> "We ought, therefore," he continues, "to look forward to the establishment of a national pharmaceutical museum at Washington. It will take years before such an institution can be realized, yet the only way to effect its organization in a not distant future is to begin the work of collecting now."

Within less than two years the efforts of the committee toward establishing a national museum of pharmacy, bore fruit. In the 1905 meeting the Historian reported:

> "Somewhat more than a year ago, steps were taken by your Historian to secure the coöperation of the authorities of the Smithsonian Institution. At the time of the Kansas City meeting no reply had been obtained. However, shortly thereafter a favorable reply was received from the Assistant Secretary of the Smithsonian Institution who is in charge of the U. S. National Museum."[2]

From this evidence it seems fair to conclude that the efforts of the Historian and the Historical Section of the A. PH. A. exerted strong influence toward the founding of the now splendid section of Pharmacy and Medicine in the National Museum in Washington.

Your present Chairman feels that the members of this Section should continue to cooperate with the National Museum. There should be a patriotic pride in having the utensils and materials used in the advancement of pharmacy available for public inspection in the Nation's museum. He also believes that the new home of our ASSOCIATION (regardless of the National Museum) should possess a museum illustrating the steps taken in the progress of pharmacy. Manuscripts and documents of the leaders should be kept. Typical utensils, tools and materials should be preserved. The commonplace of to-day will be the rarity of to-morrow and eventually the antique.

Molds, tablet presses, pill coaters and obsolete pharmaceutical equipment of various descriptions may still be obtained from neglected shelves and store rooms of many an old pharmacy shop. Scattered, they represent little more than junk, but collected, they represent step by step the evolution of pharmacy. These things should be preserved with the name of each donor, together with as much data as possible, particularly the date and location of their uses. They can only be secured by individual search and effort. They must be obtained now or many of them will be lost forever.

But returning to the Historical Committee, from the first its programs were filled, its meetings well attended and followed by enthusiastic general discussion. Accordingly, in 1904, after two years of service, the Committee felt justified in making the following recommendation:

> "The historical work of this ASSOCIATION was organized in the form of a committee for two reasons. Should the work not appeal to the society, it could with perfect ease be disorganized by a mere discontinuance of the committee. However, in case of a successful beginning, it could at any time be converted into a section and thus be given a permanent place in the organization of this ASSOCIATION."
>
> "To your Chairman it would seem that the time has come for the second step to be taken."[3]

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[1] PROC. A. PH. A. (1903), page 541.
[2] *Ibid.* (1905), page 94.
[3] *Ibid.* (1904), page 427.

At the same meeting of the ASSOCIATION the address of President Lewis C. Hopp, referring to the Committee on Historical Pharmacy, stated:

> "The maiden report of this Committee presented at its first session a year ago at once came into general favor with those who were fortunate enough to be present..... Much credit is due to Edward Kremers, the Chairman, who has proved to be the right man in the right place, and to his efficient secretary, E. J. Kennedy.
>
> "Historical pharmacy should be placed on a more permanent basis, and I recommend that the ASSOCIATION at this meeting establish a Section on Historical Pharmacy, with Mr. Kremers as permanent chairman."

The ideas of Dr. Kremers regarding the Section's officers, as expressed in his address, 1904, were:

> "Though the work is to deal with the past, it needs the new blood and ideas of a Chairman and Secretary who are elected annually.....
>
> "In order to make successful consecutive work possible, which will be equally necessary to this new department of Associational activity the office of Historian might be created, such office to be permanent and its occupant to be obligated as associate to the succeeding Chairman of this Section."

Out of consideration for Dr. Kremer's request, he was excused from holding office as permanent chairman, but was appointed and accepted the office of permanent historian. After serving eight years he resigned but has ever been the Section's most loyal supporter.

Following the recommendations of President Hopp, modified by the views of the Historical Committee's Chairman, the Committee on the President's Address[1] reported:

> "We concur in the recommendation of the President that a Section on Historical Pharmacy be established. We recommend that the elective officers of this section consist of a Chairman, Secretary and Historian, the same to be elected annually, and associates may be added by the officers of the section.
>
> "We further agree with the President in his recommendation that the exhibits should be made of educational value, and we hope that the Historical Section, as soon as organized, will make exhibits of an historical and educational character."

Thus after two years' triumphant trial the Historical Committee was dissolved and the Historical Section organized. Your present Chairman feels that the Section's success should, in fairness, be credited to the firm foundation laid by its founders, and especially to the earnest work of Dr. Kremers. As already stated he is convinced that new officers of the Section will find their work facilitated and increased in value to the ASSOCIATION if they permit themselves to be guided by the suggestions in the reports of the old Historical Committee.

Of particular value in this connection is the proposed "Bibliography of American Pharmaceutical History," mentioned by Chairman Kremers and the printed tabulation in the 1904 PROCEEDINGS of the ASSOCIATION.

In closing it may be of interest to note that since 1902 when our Historical Section came into being, several other scientific societies have realized the value of preserving historical documents and materials and have established historical sections. Prominent among these is the Société d'Histoire de la Pharmacie, organized some years before the World War, and the Gesellschaft für der Geschichte der Pharmazie, organized a few years later. Since 1902, when our own section was founded, the American Chemical Society has established an historical section which is attracting increasing attention. Also a "History of Science Society" has been founded, and a Society of Agricultural History has been established in connection with the American Historical Society.

Truly the founders of our own section "builded better than they knew."

On motion of James H. Beal, Chairman Lloyd was given a vote of thanks.

Chairman Lloyd appointed James H. Beal and William B. Day as a Committee on Nomi-

[1] PROC. A. PH. A. (1904), page 48.

nations and requested the Committee to report at the close of this meeting as, probably, only one session will be held.

Secretary L. E. Warren reported on the activities of the Section and referred to the interesting program which resulted and is now presented.

The next order of business was the reading of the report of the Historian. It follows:

THE HISTORIAN'S REPORT.

BY E. G. EBERLE.

The transactions of the annual meetings are part of the history of the AMERICAN PHARMACEUTICAL ASSOCIATION, and it may be said that the meeting held in Baltimore recorded many things that will be subjects of interest to those who shape the affairs of pharmacy in after years. Both the President and the Secretary of the Canadian Pharmaceutical Association were present. Among the speakers were Governor Albert C. Ritchie and a member from England who takes an active part in the promotions of the ASSOCIATION, Henry S. Wellcome, who became a member fifty-five years ago. There were present fifteen former presidents, showing their continued interest; one of them presided over the meeting held in 1888; one arranged a trip around the world so as to attend the meeting in Baltimore.

Last year's meeting made possible an historical exhibit of books and photographs, which pointed out the possibilities of the Library and Museum in the Headquarters Building, and the report of Chairman H. A. B. Dunning gave the members an understanding of the American Institute of Pharmacy. The closing feature gave evidence of the educational advancement of pharmacy by the dedication of a University pharmacy building.

The Pharmacopœial Convention of 1930 has become part of history and the transactions set in motion the revision of another edition of the Pharmacopœia which had served as a standard during a preceding period. The Committee of Revision of the National Formulary was also organized; likewise, the Committee of Revision of the Syllabus has made progress to the extent of having completed in a tentative form the issue which will for a time indicate the general scope and character of the instruction given in American pharmacy schools. A committee is studying the national educational policy relative to the four-year curriculum proposed for the schools of pharmacy beginning with 1932.

The issuance of the Pharmaceutical Recipe Book is an outstanding event of the year, and a later book "Fighting Disease with Drugs" has been published which makes the pharmacist, pharmacy, drugs and the druggist better acquainted with the public.

A radio talk by Dr. Howard W. Haggard of Yale, sponsored by Eastman Kodak Company, on July 19th, gave the public a very good understanding of the history and service of pharmacy; recently the *Dallas News*, Sunday edition, had a full-page editorial on the service of pharmacists and the "Magazine Section" of the *Baltimore Sun* of June 21st contained an article on "The New Institute of Pharmacy" and along with it an historical account of pharmacy. All of which goes to show, notwithstanding attempts by some to belittle pharmacy, that a better understanding is developing. Pharmacy Week also has had a part, and in this connection reference should be made to "The History of Pharmacy Week" presented at the Baltimore meeting by the late Robert J. Ruth. In the December JOURNAL for 1930 events of 1930 are listed, and this reference is made for an historical record.

An article read before the Annual Congress on Medical Education by Ernest E. Irons, last year, contains the following among other statements: "A closer acquaintance and coöperation between the hospital pharmacist and the members of the attending staff will be of mutual profit." In many hospitals the staff has failed to avail itself of the store of pharmaceutical information which may be had from the pharmacist for the asking, and the pharmacist has not taken as large a place in hospital conferences as he should. Other physicians in hospital work and public health service have expressed themselves in a related way; Dr. John Morgan, pharmacist as well as physician, stressed the importance more than 150 years ago. As a record, mention is made of the U. S. P. and N. F. Exhibit at the last meeting of the American Medical Association; reference is in the July issue of the JOURNAL and a more complete report will appear in the August number.

Under the Parker Bill, now law, ten Assistant Pharmacists were commissioned. The National Institute of Health was created by the enactment of the Ransdell Bill and has been

organized. The author of the measure said: "Here, under a commander-in-chief, will be marshalled the Nation's army of experts in the science of medicine, surgery, pschiatry, dentistry, chemistry, physics, biology, bacteriology, pharmacy and allied professions in a concentrated drive to prevent disease by ascertaining the cause and applying preventive measures in advance of its outbreak." An editorial on the subject may be found in the May JOURNAL, page 422.

In 1921 the King of the Belgians, recognizing the importance to humanity of preserving and standardizing the dearly bought experience of the World War as regards the rescuing of the wounded in battle and the preserving of the armed forces from disease, called an International Congress of Medicine and Pharmacy which met in Brussels in July 1921. Twenty countries sent official representatives to this Congress, and its results were so valuable that subsequent congresses were held in Rome in 1923, Paris in 1925, Warsaw in 1927, London in 1929 and at The Hague in 1931, June 1st to 6th. A subject of interest was "The Recruitment and Training of Military Doctors and Pharmacists," introduced by representatives of the Dutch and Jugo-Slavian armies. Another subject was "The Preparation and Preservation of Ampuls Containing Drugs Used in Health Services;" this was introduced by the pharmacist officers of the armies of Holland and Rumania; nearly seven hundred delegates from thirty different countries attended; pharmacy was represented by fifty delegates, none from the United States.

The AMERICAN PHARMACEUTICAL ASSOCIATION has pride in its contributory work to limit the use of narcotics and its PROCEEDINGS bear records of the earliest efforts and legislation on this important subject. The Geneva Conference made considerable progress in the limitation of narcotics. In response to his invitation, representatives of medical, dental, pharmaceutical and veterinary associations, and of other scientific associations and agencies conferred with Surgeon General Cumming in Washington on August 12, 1930, with reference to carrying into effect the provisions of the Act approved June 14, 1930, and generally known as the Porter Bill, whereby the Surgeon General of the Public Health Service is authorized and directed "to make such studies and investigations as may be necessary, of the abusive use of narcotic drugs; of the quantities of crude opium, coca leaves and their salts, derivatives and preparations, together with such reserves thereof as are necessary to supply the normal and emergency medicinal and scientific requirements of the United States." The results of the meeting were pronounced by the Surgeon General as helpful.

The Society for the History of Pharmacy is continuing the issuance of fine historical monographs. One of the last relates to the life and work of Carl Wilhelm Scheele prepared by Dr. Otto Zekert of Vienna. The booklet is well illustrated and gives the genealogy of the pharmacist.

The same may be said of the French Society for the History of Pharmacy. Recent issues of Austrian and German pharmaceutical publications have given reports of the recent meeting of the Society for the History of Pharmacy held in Vienna. We note among others, articles on the sources of medicine and pharmacy of the German apothecary shop in the development of the pharmaceutical industries.

The eighth general meeting of the International Pharmaceutical Federation was held at Stockholm, July 16th to 19th, reported in the JOURNAL for September 1930. The next meeting will be held in 1932, at Prague, and a meeting is contemplated in or near Chicago in 1933. Dr. J. J. Hofman is the president and the secretary is T. Potjewijd, chief pharmacist of the Hospital of the University of Leydon.

The date of the birth of Galen is not definitely fixed, probably 130 or 131 A.D. The event was celebrated during last year by several organizations, among them the Wellcome Historical Museum. This museum has two editions of "Methodus Medendi vet de Morbus Curandis," editions printed in Venice in 1500 and in Paris in 1519, which contain the original formula of Cold Cream.

The Japanese Pharmaceutical Society celebrated its 50th anniversary April 19th. The Society of Chemical Industry held its Jubilee session this year and the official organ—the Journal of the Society published a "jubilee" number, among those honored in the issue are pictures of a number who were active in the organization and also in the British Pharmaceutical Conference.

The German Pharmaceutical Society celebrated its 40th anniversary in November 1930, commemorating the occasion; Dr. Paul Siedler dedicated a memorial volume to Prof. Dr. Hermann Thoms. A brief account of the celebration is printed in the November JOURNAL for 1930.

Scientists of five countries were asembled at Shaw's Garden in St. Louis on October 31st and November 1st to celebrate the three hundredth anniversary of the first authentic record of the use of cinchona bark. The countries represented were Java, Holland, Germany, Scotland and the United States. In connection with the celebration there was an exhibition of cinchona bark and its derivatives; also, among other displays, showing the gathering of the bark and the instruments used, etc., were the quaint old saddle-bags of Dr. John Sappington, the Missouri practitioner, whose fever pills first introduced the specific value of cinchona bark to the inhabitants of Missouri valley.

The celebration opened with a symposium on the history of cinchona as a drug, by Prof. Leo Suppan; as a chemical, by Dr. Edwards Kremers; and in medicine, by Dr. George Dock of Pasadena, Calif.

Prof. Robert J. Terry of Washington University School of Medicine, told the story of Dr. Sappington and his fever pills. Speakers at later sessions were Prof. Wilbur L. Scoville, Dr. Frederic Rosengarten, Dr. Torald Sollmann and Dr. Kenneth X. Maxey of the University of Virginia.

The French pharmacists, Caventou and Pelletier, discoverers of quinine, received deserved mention during the occasion.

The significance of the work of John Bartram was commemorated by representatives of leading botanic and horticultural associations in this country and in England at the celebration of the two hundredth anniversary of the founding of Bartram's Garden, the first botanic garden in the American colonies. The observance was held at the Academy of Natural Sciences in Philadelphia on June 5th and 6th—also at the Bartram's Garden, overlooking the Schuylkill River—by the John Bartram Association, the American Philosophical Society, the Pennsylvania Horticultural Society and the Academy of Natural Sciences.

It was at the advanced age of 70 years that he made a tour into east Florida; arriving at St. Augustine he embarked on board of a boat at Picolota on the St. Johns River. He navigated from Picolota up the east bank of the St. Johns and also explored the West coast of Florida.

This is the centenary year of the birth of the late Prof. John M. Maisch, secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION for many years, and member of the faculty of the Philadelphia College of Pharmacy and also for a shorter period of New York College of Pharmacy.

The first Honorary President of the A. PH. A. was Philip C. Candidus, of Mobile; this is the centenary year of his birth. Last year, during the meeting of the Canadian Pharmaceutical Association, a tablet to the memory of the premier-colonist of Canada was unveiled—Louis Hébert, an apothecary, the son of the apothecary to the Court of Catherine de Medici. A number of memorials have been erected in his honor. A number of references appear in the JOURNAL and a picture of the monument in the City of Quebec is shown in the August JOURNAL, page 805.

Prof. Dr. Herman Thoms, of Berlin, has been awarded the Hanbury Memorial Medal for 1931. He planned the Pharmaceutical Institute of the University of Berlin and was, until 1927, its director; he was founder of the German Pharmaceutical Society.

The Remington Medal for 1931 has been awarded to Prof. E. Fullerton Cook, Chairman of the Revision Committee of the United States Pharmacopœia and member of the faculty of Philadelphia College of Pharmacy and Science.

The second National Congress of Italian Pharmaceutical Chemists was held in Rome, May 26 to 30, 1931. On this occasion the fifth centenary of the College of Pharmaceutical Chemists was celebrated. The AMERICAN PHARMACEUTICAL ASSOCIATION received an invitation to this celebration. References to this venerable organization have been made in the JOURNAL and others are to follow.

Brief reports on annual state and national pharmaceutical and drug-trade organizations have been reported in the JOURNAL. Indiana, Massachusetts, Nebraska and Virginia celebrated their 50th anniversaries.

Quite a number of interesting and valuable papers have been published during the past year—these were presented at the Baltimore meeting. Without seeking to name one above the other, the writer may be pardoned for referring to the letters that are part of a "Flueckigeriana" and the sketches of chairmen of U. S. P. Revision Committees.

At the last meeting the donations from Mrs. Albert Schneider were reported. We have received from Joseph N. Thibodeaux a copy of the U. S. P., Fourth Decennial Revision; from

A. M. Lichtenstein, Cumberland, an old Indian Mortar; from Miss Ida L. Maynard various copies of the PROCEEDINGS of the A. PH. A. These are all the items that have been received this year. We have had, however, further promises that historical material is being put aside for the A. PH. A., and will be turned over by the donors when the building is completed.

In the foregoing, as a matter of historical record, it should be stated that the Fourth International Congress of Medicinal Plants and those Yielding Essential Oils, was held in Paris, July 16–21, 1931. The Congress was under the direction of the French government with the coöperation of Prof. Emil Perrot. The Congress has been pronounced a success.

Each year the Historian is called upon to record the passing of esteemed members and reference to others who have contributed largely to pharmacy. Just before this coming meeting, on July 4th, one of our very active members passed into the beyond, namely, Robert J. Ruth, father of Pharmacy Week. In the July issue of the JOURNAL there is printed a history of National Pharmacy Week which Mr. Ruth presented at the Baltimore meeting. A sketch will also be found in the July number. The ASSOCIATION has suffered a great loss in the death of this member who had contributed valuable services during a number of years, the outstanding being that of the National Pharmacy Week. More extended mention should be made of quite a number who have worked faithfully and are resting from their labors. Sketches of all, or nearly all of them will be found in the issues of the JOURNAL. We can only make respectful mention in their memory, in this report:

Knute Anderson, Clarence O. Ballou, Wm. E. Bard, Charles Beyschlag, Nicholas Brumersky, Axel E. Carlson, Jacob Joseph Cohan, Wm. Kelly Collier, John W. Cuff, Arthur T. Davis, H. G. Dechant, Peter Diamond, Frank Adam Dinkler, Isaac E. Emerson, John Fuller Frames, William Arthur Frost, Daniel J. Fry, Charles Gietner, J. R. Hennessey, Dr. W. H. Henshaw, George P. Hetz, Edward Vernon Howell, D. W. Jones, Solomon Karl Kahn, Wm. Charles Kirk, Henry L. Klopp, Fred Kolliker, George E. Kurtz, Charles, G. Lindvall, Frank M. Mares, Jesse C. Matteson, F. W. McNess, George Robert Merrell, M. A. Miner, Harold S. Mitchell, Wm. Mittelbach, Martin Molitor, B. M. Moulton, B. L. Murray, W. S. Richardson, D. B. Schindel, C. G. Shedd, M. H. Smith, Samuel Smith, George W. Sohrbeck, O. P. Stephan, J. F. Voight, C. B. Warne, F. C. Waterbury, J. L. White, Wood Wiles, H. W. Wiley, Edward Williams, Robert T. Wincott, O. F. Wolf, W. C. Zamboni, George Zoeller.

Mention is also made of the following: Dr. Adolph Engler, noted botanist, died October 10, 1930; a Japanese pharmacist, Narakichi Hishida, died January 8th of this year. One of our beloved honorary members, E. M. Holmes, who had lived to the ripe old age of past 80, died October 9, 1930. Stephen G. Porter, known for his work on narcotic control, died June 27, 1930. Dr. Albert Schammelhaut, one of the most active workers in the International Pharmaceutical Federation, died January 20th of this year.

Dr. James H. Beal was called upon by the Chairman and said in part as follows:

"In 1919, the late Dr. Edgar Fahs Smith, of Pennsylvania, issued a book entitled 'James Cutbush, American Chemist,' in which he portrayed the life and professional activity of one of the early American chemists.

"James Cutbush was born in 1788 and died in 1823. For the period of his active life he was instrumental in accomplishing a great deal of good in chemistry in the way of actual contributions to the science and in the collection of scattered literature relating to the subject and its assemblage. He was the author of papers on the application of chemistry to arts and manufacture. Fifteen papers of his were published in the *Philadelphia Aurora* when he was twenty years of age. At the age of twenty-five he was made president of the Columbia Chemical Society. He was professor of Chemistry in St. John's College, in which Benjamin Smith was professor of Botany and Natural History. When twenty years of age he was the author of 'American Artists Manual,' in two volumes. This work was educational and technical and one of the first publications of the kind in American history. At the age of 26 he was Assistant Apothecary General of the U. S. Army. He was Chief Medical Officer at West Point Military Academy at the age of 32, and was acting professor of Chemistry and Mineralogy at West Point when 33 years of age. He was the author of 'System of Pyrotechny' in which he made a thorough study of all then obtainable in military pyrotechny. He did valuable work in the investigation of combustion and the manufacture of gun powders.

"A good many years ago I came across a volume in an old drug store, called 'Cutbush on Adulterations,' published in 1823. It is further interesting because it contains an insert in the author's handwriting in which he presented this volume to Professor Douglas Smith. In his book he states he searched for this book for many years and was never able to obtain a copy, so I think we are justified in regarding it as a fairly good volume. It is likely that it was published purely for his classes, therefore never obtained extensive publication.

"It gives me great pleasure to present this book to this Section for its historical library."

On motion of E. G. Eberle, Dr. Beal was given a rising vote of thanks.

President H. C. Christensen was called upon. He stated that he was always interested in the work of the Section on Historical Pharmacy and considered it one of the most important.

The first paper on the program was entitled "The History of Florida State Pharmaceutical Association," by L. J. Taylor. It was read by title. Likewise the paper by Roy B. Cook on "The Rise of Organized Pharmacy in West Virginia." (Both of these papers are interesting and valuable contributions.) Secretary Warren in a brief way described the latter paper and stated that he considered it a valuable document.

James H. Beal suggested that all states be requested to prepare histories of their organizations. In supplementing this suggestion Thomas Roach said that a resolution to that effect should be adopted and that papers on other historical matter should be asked for also. The resolutions are embodied in the resolution on page 809 in the August number of the JOURNAL.

The paper on the "Golden Jubilee Celebration in Kansas" was presented and read by title; it is a valuable historical contribution by Mathias Noll. This is in line with the request by resolution of the Section.

William B. Day read a paper on "Philo Carpenter, Chicago Pioneer Pharmacist" (page 922).

James H. Beal remarked that this was a very valuable paper. (More papers along this line should be published. Every state has outstanding pharmacists.)

The next paper of the program presented "A Brief History of the College of Pharmacy of the University of Florida." Dr. Townes R. Leigh stated that the paper was submitted in two sections, the first by W. D. Jones and the second by himself.

James H. Beal paid tribute to the College of Pharmacy—the university has fine buildings, an extensive library, equipment and facilities, and competent instructors. Valuable contributions have been made to the programs of the AMERICAN PHARMACEUTICAL ASSOCIATION.

A vote of thanks was given to Dean Leigh.

The next number of the program was an illustrated paper on "The Pharmacists' Show Globes," by Aaron Lichtin. It was presented by Louis Gershenfeld.

In discussing the paper by Mr. Lichtin, William Gray stated that he had seen some show globes that seemed to bring out the colors better than others shown in the pictures. The globes were used about forty years ago by Buck & Raynor. There was further discussion relative to the show globes as an emblem of the drug store, and James H. Beal suggested that it might be well to draft a resolution to be presented to the House of Delegates to the effect that the show globe was a symbol of the drug store and that the use of it be not allowed in any other stores. The motion was duly seconded and carried and this is represented in resolution No. 15, printed in the August JOURNAL on page 809.

Chairman Lloyd remarked that he had an experience lately while endeavoring to secure some old show globes for the exhibit of Pharmacy and Medicine in the Smithsonian Institution. He asked the proprietor of an old store in Cincinnati whether he had any old show globes. He said he had three and would be glad to donate them. When he returned for the show globes the proprietor had changed his mind and would not donate them. However, he secured an old brass mortar and a small instrument for stamping tablets which the proprietor contributed. Dr. Whitebread considered the tablet press of real value as there was nothing in the Museum like it.

Chairman Lloyd stated that this shows the great value of apparatus that may be stored away in old drug stores whereby the history of pharmacy may be illustrated. He, therefore, suggested that every member keep this in mind and secure articles of that kind whenever possible to be displayed in the Museum of the American Institute of Pharmacy.

The program of the first session was completed and the chairman inquired whether the Section should be adjourned or effort made to complete the work of the Section at this time. It was voted to continue with the program assigned for a second session.

Three papers presented by Dr. Edward Kremers were read by title—"William Lewis;" "An Attempt at a Phytochemical Bibliography;" and "Phytochemical Terminology."

The paper by John Uri Lloyd and John Thomas Lloyd entitled "The Librarian's Story" was read by Secretary Warren. (It is published in the September number, page 918. This paper indicates how, frequently, historical matter can be obtained.)

A paper on the program entitled "Pharmacy and Medicine in Ancient Egypt" was transferred to the General Session.

Chairman Lloyd remarked that the paper by the late Robert J. Ruth on "The White House Contributes to Our Section on Historical Pharmacy" be read by title and suggested that it was fitting to pay tribute to his memory by several moments of silence.—Carried.

The next paper was entitled "Exploring Economic Plants," by Ernest T. Stuhr. The paper is illustrated and points out the possibilities of raising drug plants on a commercial scale in Oregon.

At the suggestion of Secretary Warren the paper had been divided into two parts, scientific and historical. The latter was presented in abstract by the Secretary.

The Secretary also spoke relative to a paper by Wm. Wyatt on "Edward Morrell Holmes—A Reminiscence and an Appreciation."

This concluded the reading of papers and the report of the Committee on Nominations was called for.

James H. Beal announced as nominees—John Thomas Lloyd for *Chairman;* and in view of the fact that the present Secretary was elected *chairman* of the Scientific Section and did not think it best to accept of two important offices, the name of Louis Gershenfeld was presented; and for *Historian*, E. G. Eberle. *Delegate to the House of Delegates*, L. E. Warren.

In regular procedure the nominees were elected for the ensuing year. After the installation of officers the Section was adjourned.

CONFERENCE OF PHARMACEUTICAL ASSOCIATION SECRETARIES.

ABSTRACT OF THE MINUTES OF THE MEETING HELD IN MIAMI, WEDNESDAY, JULY 29TH, AND THURSDAY, JULY 30TH.

The First Session of the Conference of Pharmaceutical Association Secretaries was called to order at 2:00 P.M., July 29th, by Chairman J. G. Beard. He announced that this was the fifth annual convention of the Conference. He stated further that this organization was the result of the thought presented by Secretary A. L. I. Winne in 1926. He issued a call to all secretaries of pharmaceutical associations to meet in St. Louis in 1927 in order to form this organization. Mr. Winne presided at that meeting.

Chairman Beard stated that the meeting would be as informal as possible.

The first order of business was the roll call by the Secretary. The following responded:

W. E. Bingham, Alabama; E. D. Oslin, Arkansas; W. Bruce Philip, California; Charles J. Clayton, Colorado; G. H. Grommet, Florida; Robert Wilson, Georgia; William B. Day, Illinois; F. V. McCullough, Indiana; J. W. Slocum, Iowa; J. W. Gayle, Kentucky; E. F. Kelly, Maryland; Joseph J. Burniac, Michigan; J. G. Beard, North Carolina; D. F. McLemore, Oklahoma; Henry Brown, Pennsylvania; Frank Smith, South Carolina; Rowland Jones, South Dakota; George F. Flashman, Utah; A. L. I. Winne, Virginia; J. Lester Hayman, West Virginia; John B. Tripeny, Wyoming.

After roll call President Beard read his address. It follows:

ADDRESS OF PRESIDENT.

BY J. G. BEARD.

In bringing you this message I am prompted by the primary purpose of the Conference which is for every secretary to give every other secretary the benefit of his experience and observation as an association executive, and also to suggest such new procedures as seem to offer possible helpfulness. Twenty years in office as a state association secretary lie back of my remarks to serve as a foundation on which my conclusions have been built.

To begin with, I am firmly convinced that the offices of secretary and treasurer of every state pharmaceutical association should be vested in one person. Having first been secretary

alone, and then for some fifteen years had the dual job of secretary and treasurer, I am in a position to know which plan has been more effective in our own state. The work of the two offices is so interrelated that economy of time and effectiveness of effort are served when one person performs both duties. In this connection I am also convinced that in those states where the potential membership is great enough to pay an adequate salary that the whole time service of a competent pharmacist should be engaged for the highly important duties that belong to the office of secretary-treasurer. Such a person could, by giving his entire time, thought and effort to the job, not only build the membership up to a high ratio but could function in a comprehensive way that is not possible when a part-time official is trying to carry on two or more different sorts of jobs. If however, a state association believes it cannot afford to employ the entire time of its secretary, then I believe that it is well to seek an official who is a pharmacy teacher of experience, because such a man not only has more free time than a practicing druggist that he can give to the affairs of the organization during the college year, but he has three months in the summer during which he can concentrate his energies on association business. He would be able during the summer to travel over the entire State, solicit new members, collect dues, and by personal contact take the association to its membership. In my experience nothing has been more helpful to our association than this annual visitation. Only by means of it were we able to raise our membership ratio to 90% and maintain a satisfactory treasury balance.

In our organization we employ an all-time attorney. His service has proved invaluable, especially in legislative work. Almost to him alone goes credit for the defeat of every form of sales tax legislation during the recent session of our General Assembly. Such a person can assist the secretary in selling pharmacy to the public by appearance before civic bodies and by delicately-handled newspaper propaganda.

Every state association should either publish a monthly or quarterly journal or should issue frequent bulletins to the entire membership. An organization must maintain a very close contact with its membership if it is to hold a secure place in the minds and hearts of its constituency. Another means to this end is through the formation and guidance of district or even county organizations of pharmacists that are made to feel themselves essential units in the statewide association. Any plan that ties up each individual druggist with his state organization is a good plan, especially if it makes him feel that he is a necessary part of the whole order of things.

The North Carolina Association uses a mail ballot system of electing officers. I cannot endorse too enthusiastically this system. The plan operates in this way: At the first session of each convention the president appoints a committee of seven charged with the duty of preparing a slate that contains two nominees for each elective office. Our state is divided into three geographical zones and the officers are rotated regularly. To illustrate: this year the two presidential nominees were picked from the western zone; the first vice-president from the central; the second vice-president from the eastern. Next year the central zone will get the presidency, etc. The slate brought in by the nominating committee must be endorsed by the entire convention. It can be amended from the floor. After the slate has been approved the ballots are promptly sent out; only dues-paid members can vote, a canvassing committee counts the votes received within thirty days, and publicity is limited to the successful candidates. Under this plan every member taxed for dues is given equal suffrage with convention attendants though the latter have the sole privilege of saying who is to be voted upon. This plan is but another of many ways of making each member feel that he is an important part of the Association even though he cannot attend the annual conventions.

Our organization believes strongly in keeping an accurate, comprehensive historical record that includes not simply the annual volumes of proceedings but complete biographical data and photographs of every member who has held any sort of office or who has taken a prominent part in association or board of pharmacy affairs, as well as cards showing all available information about all of the pharmacists, living and dead, who have been licensed in North Carolina. Our "morgue" is, we believe, unexcelled by any pharmaceutical organization in the country. We dedicate practically every issue of our monthly journal to some association member, printing his photograph in 4 x 6 size and giving on the opposite page a complete record of his life and career. This plan has greatly pleased many of our members and has served as a sort of "Who Is Who" in North Carolina Pharmacy.

I believe that a state association can prosper to a greater degree if it has the cordial support of traveling men. We encourage such assistance by means of a Traveling Men's Auxiliary, by asking selected members of this body to give talks at the conventions, and by running a page every month in the JOURNAL that is intended solely for and is edited by the T. M. A.

I believe that a state association secretary should conduct without charge a bureau of employment.

I thoroughly oppose the plan practiced by many associations of asking manufacturing firms for merchandise to be used as prizes at annual conventions. This plan is objectionable because it is resented by manufacturers, serves no really useful purpose and is essentially unethical and undignified. I confess with shame that our association is frequently guilty of this reprehensible practice.

The proceedings of many state associations are filled with persiflage. The printed minutes will be read only if the essence of convention affairs is published. While prepared papers and resolutions should be printed in full, discussions from the floor should be summarized unless some very delicate or important point is involved.

A feature that has been successful with us is what we term a "Commercial Clinic." At each convention we devote an entire session to talks on practical subjects that are strictly limited to ten minutes. Selected men are chosen for these talks and they speak—not read—the results of their own experiences. Five-minute discussions follow each talk.

This brings me to a question about which I cannot offer constructive suggestions but which I nevertheless realize is a vital problem. How can convention delegates be made interested in professional and scientific subjects such as befit organizations composed of persons who should naturally be interested in such matters? I hope that this question will be discussed at this session of the Conference.

This address, already overlong, is concluded with a tribute due to certain state association secretaries with a long record of service behind them and still in office. The following list, in chronological order, shows who these men are.

J. W. Gayle, of Kentucky, began service in 1889, forty-two years ago, and is still "going strong." To him belongs the distinction of being in point of service the oldest state association secretary in America. The next oldest is Frank M. Smith, of South Carolina, who began in 1900. Then follows: W. E. Bingham, Alabama, 1901; T. D. Wetterstroem, Ohio, 1904; E. S. Dawson, New York, and W. B. Day, Illinois, both in 1906, and E. F. Kelly, Maryland, 1907. The youngest of these has a quarter century of experience as a secretary, and for such a faithful record I recommend that this Conference extend to these gentlemen a resolution of appreciation for their lengthy and loyal service on behalf of organized pharmacy.

I wish to thank you for the honor you paid me last year in naming me as the head of a body that I believe has before it a brilliant future of usefulness. Secretary Winne, of Virginia, unquestionably made a valuable contribution to association secretaries when he set in motion machinery that finally became the Conference of Pharmaceutical Association Secretaries.

Secretary Wilson, of Georgia, inquired whether the names submitted by the Nominating Committee could be amended. The President replied that this could be done from the floor, that the Nominating Committee is usually composed of former presidents.

Secretary Slocum, of Iowa, inquired whether the By-Laws provided for geographical division. The President replied that it was not fixed at the start but, later, at the suggestion of Mr. Zoeller it was so arranged.

Secretary Smith, of South Carolina, inquired relative to the percentage of the ballots mailed out and the number returned.

The President stated that last year there were 249 out of a membership of 880, about 30%. He had noticed that in previous sessions the election of officers is on the last day of the meetings and these officers are elected by about twenty-five or thirty.

Secretary McLemore, of Oklahoma, inquired as to the number present at the convention.

President Beard replied that he had no means of knowing that. Secretary Wilson asked relative to the time limit on the return of the ballot. The President replied thirty days. He was asked who did the final counting and the President replied that it was done by a board of canvassers, residing in the town in which the President lives.

Secretary Philip, of California, suggested that the address of the President be received and opened for discussion at the proper time. This motion was carried.

The report of the Secretary was next read. It follows:

REPORT OF THE SECRETARY.

BY CARL G. A. HARRING.

To the Members of Conference of Pharmaceutical Association Secretaries:

Inasmuch as the work the secretary is called upon to do is covered by direct communication with the members there seems to be no necessity for a detailed report outside of the financial statement.

Three broadcasts and one letter were sent out during the year; if the contents may seem rather meagre it should be borne in mind that your secretary cannot give something he does not possess, and the failure of members to furnish material, is naturally, a handicap.

Many secretaries are making a practice of sending copies of the official organ of their association to the other secretaries—if this is done regularly and without omitting any of the names on our list it will of course remove the necessity for a great deal of your secretary's work. In this connection I would suggest that if secretaries were to send news of their office and association activities as well as of their legislative work to the Conference secretary who in turn would make an abstract of these items and distribute them at regular intervals—say once in two months—it would be a step in the right direction. This would of course involve more work and the cost of printing and distribution would be larger, but we might then be able to show some of our non-contributory members that this service would be worth the small fee that we have voluntarily stipulated. Thirty members out of a possible membership of fifty-six paid dues during the past year; so far this year we have received dues from fifteen members—if we could maintain 75% collections we might be able to offer a really worth while service.

The appended treasury report shows a balance on hand of $211.44.

CARL G. A. HARRING, *Secretary-Treasurer.*

FINANCIAL STATEMENT.

Received from Charles J. Clayton, July 10, 1930		$201.88
Received during balance of 1930		50.00
		$251.88
Expenses.		
July 30, Mimeo and mailing	$ 3.00	
Bill heads and Stationery	12.00	
A. PH. A. for reprints	7.99	
A. PH. A. for reprints	2.66	
Clasp envelopes and stamps	3.25	
Telegram	.65	
Mimeo	7.24	
Stamps and envelopes	2.65	
50 copies of Boston Herald	1.00	
	$40.44	40.44
Balance on hand January 1, 1931.		$211.44

On motion duly seconded and carried the report was accepted.

President Beard appointed the Committee on Nominations: W. Bruce Philip, California; A. L. I. Winne, Virginia; and Frank M. Smith, South Carolina. At the request of Secretary Winne, because of his leaving, the name of J. W. Slocum was substituted for his.

President Beard said it is hoped that following the presentation of each of these talks that there will be a round table discussion, questions asked of the speaker and any points that he suggests be dilated upon.

The first subject for discussion was "A Weak State Association," presented by Secretary Robert C. Wilson of Georgia. It follows:

A WEAK STATE ASSOCIATION.

BY ROBERT G. WILSON.

"As I see it, an association may be weak from any standpoint. It may be weak from the standpoint of membership. It may be weak from the standpoint of ideals. It may be weak from the standpoint of achievement. It may be weak from the standpoint of its officers. It may be weak from the standpoint of its secretary. It may be weak from the standpoint of its affiliations. It may be weak from many standpoints.

"Any one of those phases of the weakness of an association might be considered a subject for discussion in itself, so with so much in mind regarding the weakness of an association, I was somewhat in doubt as to how to proceed in discussing this subject.

"I imagine every secretary here would judge, perhaps, that his association was weak from some one or more of these standpoints. I certainly would judge that the Georgia Association was weak from several of these standpoints and perhaps others I failed to mention, but it has occurred to me since the President has discussed one or more of these propositions in his splendid address; other points, perhaps, will be brought out during our discussions here.

"I want to inject this particular thing, not as a weakness although it could be so considered as I have studied the programs which have been offered by the various associations. It seems to me I see in the programs arranged for the annual meetings of our associations, an element of weakness there and I believe that one of the best things we can do in the matter of building up real, constructive, broad association activities is perhaps in the development of programs for our annual meetings. President Christensen touched on that point this morning in his address and I agree with him heartily.

"At the past meeting of our Association at Macon, Georgia, in an effort to carry out the ideas presented in this thought, I went about getting some one who would constitute our principal speaker, whose name would be in the headlines and would bring the Association and pharmacy in general to the attention of the people of the State. I have known of association meetings to take place when there was no comment, virtually no comment in our local newspapers in the cities in which we met, certainly none in the State papers. So I wanted to get a man who would put pharmacy in Georgia on the front page of the Georgia papers. My first thought was Franklin D. Roosevelt, of New York. He comes to Georgia every spring and I thought perhaps he might be in Georgia at that time and would address this body. I wrote him personally. I had the editors of the larger daily papers of Georgia write to Mr. Roosevelt in an effort to get him down there, feeling that if Franklin D. Roosevelt came to Georgia to speak to the Georgia druggists that thing would be worth thousands of dollars to pharmacy in Georgia. Mr. Roosevelt, unfortunately, was tied up with his Legislature, and couldn't come to Georgia and hasn't been able to get to Georgia yet, I believe, though he comes every year.

"I then thought of Governor Ritchie of Maryland as a spectacular figure and in view of the approaching presidential election of 1932, there would be added interest, but Governor Ritchie was tied up in his legislative sessions and couldn't come to Georgia. Then I went after Honorable Josephus Daniels. I had several of our editors approach Mr. Daniels with the idea of coming to Atlanta, but the Legislature in North Carolina was in session and Mr. Daniels couldn't get away.

"Our Honorable Governor-Elect in Georgia was invited to be present but our extra session of the Legislature was in session and he couldn't come down. So I compromised on getting one of our Senators from Georgia. Prior to the convention, after it was announced that Senator George was to speak to the Pharmaceutical Association, we had more publicity in the Georgia newspapers as to the convention than we had ever had before. Senator George came and addressed the body and we had reporters there. His address was reported in practically every daily paper in the State, all of them stating that Senator George was speaking to the Pharmaceutical Association of Georgia.

"I feel to-day that pharmacy in Georgia is stronger by reason of the publicity we received by having an outstanding man, not a pharmacist, to address our group.

"In addition to Senator George, we had Congressman Cox of Georgia, who opposed the Capper-Kelly Bill. He is popular in his section, but I think most of the druggists will vote against him because of his stand on the Capper-Kelly Bill. We had President Christensen of

Chicago, Dr. Swain of Baltimore, and others. The Macon newspapers were very much interested. They had reporters there at every session, and during the two days of the sessions and several days thereafter the newspapers commented on various phases of this meeting. I believe it was very helpful.

"So I want to suggest that to you as a body of secretaries of State associations, to consider, perhaps, the weakness of your annual programs and in the future meetings, if you deem it advisable, get some outstanding man who is a publicist but not necessarily a pharmacist. Get pharmacy in your State on the first page of your daily papers."

In discussing the paper **Secretary Slocum** said that he strongly approved having a prominent speaker at annual conventions. He said that in Iowa they had been very successful in creating wide-spread publicity with the papers, because several outstanding men were entered on the program. It is good publicity because druggists from all over the State who know these men come with the idea of hearing them. He had to go 2000 miles to attend a meeting and there really were no outstanding men on the program of the convention, and this same criticism obtains with state associations. In his opinion it was a good idea to get men from outside of pharmacy as speakers. It will popularize association meetings.

Secretary Hayman, of West Virginia, stated that he agreed with the previous speakers, that too often with state associations the point was to have speakers who were not paid for coming, rather than have men who had a message and who were nationally known, to speak before the Association.

President Beard asked whether at any of the association meetings of states outstanding speakers were on the program of the convention.

Secretary Oslin, of Arkansas, said that they had Congressman Kelly as a speaker and many members came to hear him. At the meeting there were more than 400 present and to a large extent because Congressman Kelly was the principal speaker.

Secretary Smith, of South Carolina, said he was surprised to hear the statement made by Secretary Wilson that Georgia papers had not given publicity to the Association meetings. His experience was that the newspapers in South Carolina were glad to report conventions. **Secretary E. F. Kelly** had attended the South Carolina meeting and they gave a good account of his address. He agreed that whenever possible prominent speakers should be secured.

Secretary Harring, of Massachusetts, said that they never neglect inviting the Governor and stated that this is the first year in some time that a Governor attended a banquet of the Association. While the attendance of the convention was not as large as usual that at the banquet was larger, because the Governor as a speaker was a drawing card.

President Beard stated that one of the North Carolina papers suggested to him that a man be designated to get the news of the convention to the reporters immediately after the close of each session.

Secretary Hayman said they employed that means in West Virginia and had for a number of years designated a member of the Travelers Auxiliary; the publicity given the Association was very good.

Secretary Rowland Jones, of South Dakota, stated that the asscciation of South Dakota had profited by having representation in the state legislature and since then more publicity had been given to the conventions than previously. He remarked that it was not difficult to elect a pharmacist to the legislature provided there was coöperation.

Secretary Philip, of California, said that speakers can be obtained from the large universities. If a big man is secured he will bring his publicity to you and this also helps out the pharmacy school of the university, because the address is scholarly and reads well in print. He thought a weakness of an association was in the fact that it was permitted to have sessions start late. This lessens interest and shortens the time which should be given to the program.

President Beard hoped there would be prompt attendance at the meetings of the Conference.

Secretary Adams, of Texas, said that he endeavored to arrange to have the outstanding speakers on the program of the first or the last day of the meeting. He endeavors to get outstanding speakers regardless of whether they are connected with the drug business or not. He made reference to the fact that among the speakers at the last convention was Congressman Dies who had defeated the representative who was unfavorable to the Capper-Kelly Bill. The

subject of Congressman Dies was "The Independent's Place in Business," and he suggested that other associations would do well in securing him for their programs. He agreed with Secretary Philip relative to the opening of the sessions. He was pleased to have with him President Oliver of the Texas Pharmaceutical Association and a former president, Henry Hein, of San Antonio. Mr. Hein commended the activities of Secretary Adams and said it was largely due to him that the programs of the Texas Association are eminently successful.

Secretary Slocum emphasized the importance of getting public speakers. Nearly every year the Governor addresses the Iowa convention. The Attorney-General also is frequently the speaker and members of the Supreme Court and other state officials.

Secretary Hayman inquired whether it would not be a good idea for the incoming Secretary to send to the secretaries of the different state associations the names of public speakers.

President Beard thought this was a good idea.

Mr. Oliver said, in his opinion, every association has a publicity man.

Secretary Smith asked whether it would be a good idea to have the Secretary's office for a clearing house whereby such information relative to speakers could be obtained. He referred in his state to Senator Sam Hodges who is a popular speaker.

Secretary Hayman moved that the incoming Secretary be instructed to communicate with the secretaries relative to outstanding speakers and impart that information to all the members. This motion was carried.

President Beard announced as the next contribution to the program a paper on "To What Extent Is the Secretary Responsible for the Activities of His State Association?" presented by Secretary W. E. Bingham, who is entering on his thirty-second year as secretary of the Alabama Pharmaceutical Association.

TO WHAT EXTENT IS A STATE SECRETARY RESPONSIBLE FOR THE ACTIVITIES OF HIS ASSOCIATION?

BY W. E. BINGHAM.

Article 2—Chapter I of the Alabama Pharmaceutical Association by-laws reads:

> "The Secretary shall keep a record of all proceedings of the Association; a list of names and the residence and date of entrances of each member; he shall be the custodian of all papers and reports read; he shall conduct all correspondence of the Association and notify each member of the meetings."

I am presuming that the above embodies the duties assigned, of every state secretary. Granting that each secretary has conscientiously performed his duty as laid down in said by-law, does his responsibility then cease? The secretary seems to be the hub around which revolves the spokes—the felloes—the tire—in fact, the whole machinery of the Association, and upon his shoulders rests, to a great extent the activities of the various lines of work engaged in; to what extent he can make the rank and file of the membership work, will rest, in a large measure, the answer to the question as to his responsibility.

The Alabama Association has been very kind to its secretary; after having served for two years in succession as their president, I was elected secretary and for over thirty-one years they have kindly put up with my derelictions of duty and retained me in office. They say at every election "For life." The question raised in my subject is—Have I, have you, met this responsibility and this opportunity for service? That most efficient secretary of the great State of Texas, in a paper read before the Baltimore convention last year said, "Before a state secretary can effectually serve, there must first be builded an organization through which his energies may be directed." Well and good—then who builds this organization? Who built it in the Lone Star State. I think we will all agree that Walter Adams is largely responsible for the State having one of the best, if not the best of associations in point of members and interest in the United States. To what extent have our associations developed and grown under the leadership of the secretaries? Do we realize the magnitude of the work of a State secretary. Not to be a dummy—not merely an office-holder, not driven by a sense of duty to a perfunctory performance of what the by-laws specify—but a watchman on the walls, ever alert and active in the interest of the Association, striving to broaden the scope of coöperative work; while it is

his duty to work, it is also his duty to so conduct this work as to induce a coöperation from every member when needed, so that each will cheerfully respond to his call.

While every association has its president who is, or is supposed to be at its head, yet the success, the activities, the failures, if you please, go back to the secretary's office. The president looks to him, depends on him, and when all is said and done, an active and alert secretary means a prosperous and aggressive association, and on the other hand—but I draw the curtain and close.

Secretary Wilson inquired whether there were any full-time secretaries in the Conference present at this meeting. Among those present were E. D. Oslin, of Arkansas; F. V. McCullough, Indiana; Walter D. Adams, Texas.

Secretary Oslin stated that Mississippi had full-time business manager.

Secretary Wilson inquired how the full-time secretary is financed.

Secretary Philip replied that it is 20% money and 80% love for the work.

Secretary Wilson said they had tried the full-time Secretary in Georgia on a 60% basis but this did not pay.

President Beard stated that in North Carolina dues are $5.00 for clerks and $12.00 for proprietors, and this enables the Association to pay an attorney $2400.00 a year. The secretary receives a salary of $500.00 and the assistant secretary a salary of $1200.00 a year. He thought the offices should be merged into one person. With the advance in dues the Association was enabled to do more work than formerly under the $2.00 basis.

Secretary Wilson asked what on a basis of 1000 members the estimate would be for supporting a full-time secretary.

President Beard said he could not say specifically but that a man qualified for the work should be paid not less than $3600.00 a year and with dues of say $5.00 and $10.00 the proposition could be financed.

Secretary Smith stated that they had all arrangements that cover the proposition. There is no full-time secretary in South Carolina but there is an inspector who is also secretary of the Board of Pharmacy and his duty is to spend his entire time in the field. He goes everywhere in the state. The annual renewal is $3.00 or $4.00. He collects six or seven hundred of these renewal licenses at $4.00 each and he also secures memberships in the Association. The secretary turns over to him a list of delinquents and he does the collecting. The man in office is very efficient and has produced good results in stimulating interest in the Association.

Secretary Winne said, that while he is a full-time man, the office is not financed by the Association. He stated that he was secretary of the State Board of Pharmacy and most of his salary came from the Board, but he also was secretary of the State Association from which he received a nominal sum.

He said further that Association affairs were among the daily transactions at the office and that he traveled over the state periodically and visited the stores. Proprietors usually recognize him as the secretary of the Board, but he has an opportunity of speaking of Association affairs especially relative to convention arrangements. He said further that the Travelers Auxiliary was a great help to the Association and contributed largely to the attendance of the annual meetings by interesting the druggists. He thought that the full-time proposition could be financed in most states if gone at in the right way. It means, of course, higher dues. Compared with other states he felt that he was very happily situated.

Secretary McCullough, of Indiana, did not think it would be possible for any State association to maintain a full-time secretary on membership dues. He said that anticipating a full-time secretary the State legislature was persuaded to pass a bill whereby one-third of the registration fee would revert to the Association. Indiana has a $3.00 registration fee, $2.00 of which goes to the Board of Pharmacy and $1.00 to the Association. There are more than 4000 registered pharmacists in the state.

President Oliver, of Texas, referred to the Texas law which divides the registration fee of the Board of Pharmacy and the Association, occasionally there was some discontent.

Secretary McCullough said that the Board of Pharmacy in Indiana was entirely separate from the Association.

President Oliver stated that most of those who complained are not really pharmacists.

Secretary Oslin, of Arkansas, said that Arkansas has the best state organization. Each owner of a drug store must pay a permit fee of $10.00 a year and there are 676 drug stores in

Arkansas. The State Board of Pharmacy administers the pharmacy law. He said that he was employed as inspector. The Board of Pharmacy paid his salary and the Association paid the traveling expenses and furnishes him with an automobile. He gave all of his time to the work and owned no drug store, nor was he interested in any other business. He said further that in addition to the $10.00 permit the Association dues are $10.00 for the proprietor and $2.50 for the registered clerk. To-day there are 950 members in the State Association. The druggists of Arkansas have been able to kill every bill that was introduced against them and they had passed a new pharmacy law. Arkansas is divided into fifteen districts and each district holds a meeting every spring and elects a district chairman and vice-chairman. The District Chairman appoints a county chairman in each county. He said that he was proud of the organization and thought that if the members would study the Arkansas plan they would find in it very satisfactory arrangements.

Secretary Adams, of Texas, said that they invited Secretary Oslin to meet with them to discuss the Arkansas plan and he believed that if state associations contemplating full-time secretaries would place Secretary Oslin on their program they would benefit by the information which he could give them.

Secretary E. F. Kelly, of Maryland, and also of the AMERICAN PHARMACEUTICAL ASSOCIATION, expressed appreciation of the latter body because of the splendid attendance and the interest shown in this Conference which, in his opinion, was a most important group in the ASSOCIATION work. He said the history of the A. PH. A. discloses that the success and development of the ASSOCIATION has come about through the development of small units, particularly the state associations. He was convinced that the success of the state associations is largely due to the type of permanent officers. He said that in Maryland they had decided on an entirely different plan than that followed in Arkansas. He had been secretary for quite a number of years and, nominally, Dr. R. L. Swain does the work. By having the Board of Pharmacy directly interested it is not very difficult to take care of anything the Association wants to do.

The State of Maryland makes a contribution of $10,000.00 a year toward the enforcement of the Pharmacy Act. Inspectors who go regularly to the drug stores are the people who actually do the organization work. The enforcement of the Pharmacy Act is looked after by the State Board of Health and on this Board pharmacy is represented. The law provides that enforcement of the Pharmacy Act under the State Board of Health is in charge of an officer who is a pharmacist. The State makes a direct contribution to the University so that work costs the Association nothing.

The members pay dues of $2.00 and $5.00. A monthly publication, the *Maryland Pharmacist,* has been developed, with the end in view to have the publication pay for itself; $4200.00 was advanced from the Treasury for the publication and this has all been returned. Information for the members comes through the *Journal.* It is mailed to every man interested in pharmacy in the State, whether he is a member or not, thereby creating a tie-up and all who are interested know exactly what is being done. All of the dues coming in are for the use of the Association. As secretary he receives a very nominal salary and last year the Association was enabled to put aside, out of the income of the Association, a reserve fund of $5000.00, and this is going to be enlarged, serving as a bulwark against trouble, if it should come. The Association proceeds on the basis that the State owes it to pharmacy, to enforce the pharmacy law and the Association sees to it that the State of Maryland does enforce the law. Dr. Swain is assisted by two inspectors who visit the drug stores every four or five days. The members believe that the Association must be brought to the druggists of the state. They cannot be brought into the State Association by meeting once a year. Two meetings are held each year, one in the eastern part of the state and one on the western shore and at these meetings those in attendance can discuss anything that is of interest. An effort is made to have these sessions of practical value. At the annual meetings there are so many reports and other matters, making it difficult to have the members discuss in a personal way the subjects that interest them most. At these sectional meetings no reports are submitted. Those in attendance tell of their experiences so that others may benefit by them.

President Beard said that the purpose of this Conference is to have the members relate their experiences, successes and failures, and give the others the benefit of those experiences. He asked the members to talk freely relative to any subject they have in mind.

Speaking further, **Secretary Kelly** stated that the work of the Maryland Association was just along the line evidenced here, namely, a spirit of coöperation. He explained how this coöperation was effective in recent legislation that had been introduced into the Legislature. The pharmacists in Maryland are determined to run pharmacy within the state or as nearly as they can. In his opinion it was not possible for all states to conduct their affairs in the same way. He said that Governor Ritchie is an honorary member of the Association and attends most of the annual meetings. He knows what the pharmacists are trying to do and he is giving them good support. He stated that he is interested in Pharmacy because it is a public health activity and ought to be associated with other public health activities.

Secretary McCullough inquired whether the Maryland Pharmacy law was enforced by the Board of Health; Secretary Kelly replied that it was. To this end Dr. R. L. Swain was selected because the pharmacists of Maryland wanted a law enforcement by a man who knows the problems of the retail pharmacists. Prosecution is the last resort employed, educational means being used. Citing as an example of coöperation, he stated that when statistics were wanted for the National Formulary this work was done through the assistance of the inspectors who travel over the State and they have received almost 100% coöperation.

Secretary Kelly was asked how much time was given to the sectional meeting. He stated that whenever possible the meetings were concluded in one day.

Secretary Winne said that a district meeting had been held in Virginia along the lines of the Maryland plan. The session was held in Winchester. Virginia is divided into six districts, geographically. The meeting was held in the northern district, bordering on Maryland and pharmacists from the District of Columbia and Maryland contributed to the day's program. He was not prepared to say how successful meetings would be in other sections of the state, but the one held was quite successful.

President Beard said that the next item on the program was "Plans for Institute Work as an Association Activity." This was presented by Secretary J. W. Slocum of Iowa. It follows:

PLANS FOR INSTITUTE WORK AS AN ASSOCIATION ACTIVITY.

BY J. W. SLOCUM.

The activities of the Iowa Pharmaceutical Association have been varied in order to meet the particular need of the year and season. For three years our Association stressed coöperative advertising. This three-year program ended September 1, 1930, and we believe it was a campaign which made the people of our State more "drug store-conscious" than ever before. The contribution of the drug store to the community and the service it renders was particularly emphasized during this campaign. Nearly one million copies of carefully prepared advertising propaganda were distributed to the homes of the people each month.

Our latest plan of activity to which I wish to direct your special attention to-day is our *Business Institute Plan.*

For several years it has been our custom to hold district meetings in the Fall of the year, at least one in each Congressional district. These have proven worth while and have been feeders for our State convention. It is at these district meetings that we attempt to discuss matters that are of particular interest to the group assembled. This last Fall we contacted members of a group which had been holding Business Institutes for an organization of wholesalers and manufacturers, who had conceived of the plan as a service they could render for retailers.

They had appropriated a sum of money for this purpose and employed experts to go out over the country to hold these Institutes.

They proved to be very popular and very successful from the beginning and retailers have found them practical and helpful. The plan contemplates an afternoon and an evening session. The afternoon addresses will be given upon such subjects as Store Analysis, Store and Stock Arrangement, Stock Control, Credits, Budgetry, Personal Work and Advertising.

The evening session will be devoted entirely to Salesmanship and Selling. At the evening session it is planned to get every clerk and sales person within a radius of 50 to 75 miles to attend. It has been particularly noted that the efficiency of clerks has been greatly improved as a result of these Institutes.

As a secretary, it struck me as being of especial value to the druggists of my state, and I began negotiations to secure a series of these for October of 1931. I am glad to say I was success-

ful and have already visited each of the cities where the Institutes are to be held and arranged with the Chamber of Commerce for their coöperation. None of us ever reach a period where we cannot learn something new, and now when the air is full of talk of depression, it would seem an opportune time to suggest new ideas and promote a spirit of optimism and encouragement.

It is too often true that the owners of drug stores who have been in business for many years, hear these addresses on theory and up-to-date methods but go home and forget all about it. But the younger men begin to see that new and improved methods must supplant the old if any great degree of success is to be attained. One of our wholesale druggists has instituted a free service to retailers by employing an expert, who goes out with their contact man and plans with the retailer to rearrange his store in accordance with modern ideas.

Where this has been done there has been a notable increase in business and the work of the Institute of which I am speaking supplements this work and encourages men to adopt new and modern methods. If it is true that 300,000 independent retailers have gone out of business in recent years, there is a reason for it. It cannot all be attributed to the chain store and "cut throat price" warfare. When the pioneers of a business fail to grow with the development of the times there can be but one result.

And so we feel that in establishing this school of instruction, this school of modern methods, this forum of optimism and encouragement that we are performing a much needed service for the men of our profession.

At these institutes our plan is to hold a noon luncheon for all the druggists of the district as far as possible, and one of the Institute speakers will address the group on a subject of special interest to them, after which all will be given the opportunity of hearing the regular Institute program, which is open to retailers in other lines of business. These institutes have been held in North and South Dakota, Minnesota, and a few in northwest Iowa where requests for this service had been received from business men's organizations. After one of these meetings a druggist made the statement that it made an "8-cylinder" clerk out of a "4-cylinder" man for him.

Clerks are usually eager to get expert advice on salesmanship and this feature alone is worth the effort. We believe that this class of work has kept the volume of business better in drug stores than in any other line of retailing. Even in this period of depression, numbers of druggists have informed me that their volume has not materially decreased, and in some instances is just as good as in former years.

We believe that these institutes will lend encouragement to many retailers and help them to solve some of the problems that they are facing.

Our Association is also sponsoring, through its affiliation with the Northwest Pharmaceutical Bureau, a merchandising guide which is published each month in the *Northwestern Druggist*, our official publication. This consists of 8 pages of suggestions as to seasonable window displays, and goods to be featured each week during the current month. Many druggists are paying $30.00 to $50.00 per year for a similar service but this is being supplied without any additional cost whatever. Our Association as one of its service features sends this publication to every drug store in our state. In addition to listing, seasonable merchandise—companion sales are suggested as a method of increasing average sales. Directions are given for setting up the window displays as well as supplying copy for newspaper space.

One ingenious traveling man who saw the possibilities of this merchandising guide has had extra copies bound up in a sort of prospectus and has been selling it to other retailers for $30.00 per year. These services we are rendering should be of considerable importance and we hope of great benefit. Our principal difficulty is to get them to appreciate what this service should mean to them in selling merchandise.

Secretary McCullough inquired whether there would be trouble in getting attendance. In reply the author stated that some districts are better than others in that respect. The attendance ranged from twenty-five to sixty. District meetings had been held in Iowa every year for quite a number of years.

Secretary Philip said that, in his opinion, it would not be long before the universities would be putting on a business course of some kind and, in his opinion, the secretaries of the State Associations would tie up with this work. He thought that Secretary Slocum's paper should be sent to all the members.

President Beard asked Secretary Harring how much balance there was in the Treasury. He stated $211.00.

Secretary Philip suggested that the AMERICAN PHARMACEUTICAL ASSOCIATION would help in distributing literature.

President Beard stated that the next and last paper on the program for the afternoon is that by the Secretary on "What Services Can a Full-Time Secretary Render That Will Justify the Expenditure?" Secretary Harring replied that he had not prepared a paper but that the subject had been covered during the discussions. He asked that the President's address be considered. He said that if in Massachusetts the dues were collected by inspectors it would cost him his job. They would say that the effort was being made to influence the Board of Pharmacy. He did not know how much power State Boards had, but in Massachusetts the Board is quite powerful. Some of the members would consider it a case of oppression.

Secretary Philip said that at the next session of the Section on Education and Legislation he had two very short papers and in order to swell the attendance he hoped the members of the Conference would be present.

Secretary McCullough said that he hoped the members would attend in order to hear about the California Survey. Secretary Bingham stated that the developments of the last few minutes had persuaded him that prominent speakers should be in attendance at State Association meetings and he referred to several meetings that had been held. He was wondering whether arrangements could not be made to provide speakers for a number of the associations in consecutive order.

Secretary Oslin said that he thought the idea was good but did not know whether Arkansas could enter into such a program as the meeting dates were fixed by their constitution and by-laws.

Secretary Smith said the same thing obtained in South Carolina.

The First Session of the Conference was then adjourned.

SECOND SESSION.

The Second Session of the Conference of Pharmaceutical Association Secretaries was convened at 8:00 P.M., July 30th, by President Beard.

President Beard stated that before proceeding with the regular order of business he would like to bring the idea to the members of becoming an integral part of the AMERICAN PHARMACEUTICAL ASSOCIATION. The ASSOCIATION has been interested in the deliberations of this body and exhibited its interest, and has shown it every courtesy. He therefore suggested that the A. PH. A. be respectfully requested to give this body membership in the House of Delegates. He suggested that if the Conference concurred, that a committee be appointed to make the formal request of the A. PH. A. for representation in the House of Delegates. **Secretary Philip** made the motion. It was seconded and carried unanimously.

President Beard appointed Secretaries Philip and Slocum to act as a Committee for bringing the matter before the A. PH. A. and then if this representation is favorably considered the incoming President will be authorized to name a delegate, for the next meeting of the House of Delegates.

Secretary Harring asked consideration of the means devised for securing payment of dues of delinquents. He stated that it was very difficult to get dues out of a member after he had become delinquent for several years. In Massachusetts such a delinquent was taken in as a new member. He thought this was an important subject to consider.

President Beard asked Secretary Clayton to speak on the subject. He said that the Colorado Association received its dues through the Board of Pharmacy, the Board turning over $1.00 of each annual renewal fee to the State Association and in return the person contributing the dollar is entitled to membership.

Secretary Hayman stated that his experience was that a personal letter would bring good results. He did not consider the formal letter of much value. In response to the last letter that had been sent out by him, 23% of the outstanding dues had been collected and 5% of those were of members in arrears for three years.

Secretary Philip remarked that he had sent copies of letters to the Secretary. Several years ago the association of which he is the secretary mailed registered letters to delinquent members and requested a "return receipt." The member in arrears was advised that he had

not been removed from the list but discontinued. In these letters he had attempted to show the value of the Association. Later, when a member was two quarters in arrears he received a special delivery letter, a registered letter with a return receipt demanded. Now, such a letter will be sent when the member is one quarter in arrears. It has been found that when the bill was small it was easier to collect.

The dues are $21.00 a year and $3.00 of this is turned over to the State Association; the $18.00 goes to the *Local* in San Francisco and Alameda County.

Secretary Oslin said that the members in Arkansas pay up in October. The dues are $10.00 a year for proprietors and $2.50 for clerks; 167 have mailed in their checks recently. He did not send out bills or letters but covered the state in person. The Arkansas constitution provides that if a man is a member of the Association and does not pay his dues, he still remains a member for two years; after that time he is dropped.

Secretary Jones said that this problem had not come up in South Dakota because the membership is compulsory.

Secretary McLemore stated that this provision was covered in Oklahoma by the State law.

Dean Johnson said that every drug store in Oklahoma pays $10.00 for a license.

President Beard inquired whether this took care of the proprietors also. He said that if the proprietor is a registered druggist $1.00 goes to the Association. The owner pays $10.00 to run a drug store.

President Beard asked what the members thought about making it compulsory on the part of every registered druggist to be a member of the Association. He preferred that the membership be entirely voluntary.

Secretary Kelly stated that in the Maryland Association an effort was made not to let a man become delinquent; dues are treated just like any other business obligation. A bill is sent out and then a statement every month thereafter. He said that in Maryland the state is divided and each division is presided over by a *vice-president* and an effort is made to have an officer of the Association personally interview every druggist. This has wonderful contact value and these *vice-presidents* endeavor to clear up any dissatisfaction that may exist.

President Beard asked Secretary McCullough what his plan was. He stated that he was a very poor collector. He thought the best results that had been obtained by him were from personal notations on letters sent out.

President Beard stated that the second oldest secretary in the country is in attendance and he asked him what his methods were for collecting. Secretary Smith replied that from a good many delinquents it is impossible to collect anything. If the member is too far in arrears he is dropped and taken in as a new member. He referred to a recent meeting at which there was an attendance of 70 druggists of which a large percentage were delinquents, but they participated in all the transactions of the meeting. He thought it was quite difficult to correct this without friction.

Secretary McCullough stated that they had blue badges for the members and the visitors were given red badges. The voting delegates are those with blue badges.

President Beard stated that in North Carolina the *Secretary-Treasurer*, is charged with the duty of registering members at the meeting. Each visitor or member who registers pays $1.00 registration fee which entitles him to the entertainments of the meeting. The *Assistant Treasurer* has his books at the desk and makes use of them in collecting dues. At the last meeting dues from sixty members were collected in that way. As far as the election of officers is concerned, he said that in North Carolina the ballot is taken by mail and the ballots were limited to members who had paid their dues.

Secretary McCullough stated that the different colored badges presented a good idea, that in Indiana three different badges were used—three colors—one for the traveling man, one for the regular member and one for the visitor. Only members are allowed to vote and the president explains this several times during the meeting.

Secretary Smith said he had gotten his money's worth out of the meeting of this Conference.

President Beard called on Secretary Clayton for remarks on compulsory plan of membership. He stated that it was not compulsory membership in a strict sense. The Pharmacy Law simply provides that $1.00 of each annual renewal shall be turned over to the Colorado Associa-

tion to be used for educational purposes and the advance of the art and science of pharmacy. In return for that those who have paid are entitled to membership; it does not say that they must be members. He agreed that this was somewhat evasive and it did not allow for selection of members, because any one paying the fee was entitled to membership. Another difficulty was that it gave only a limited income and it would be impossible for the smaller states to put this into practice. In the states wherein they have many members it is of value. He thought it was fair for a registered man to contribute to the upkeep of the State Association. It has been said that this provision was not constitutional but it has not been tested. The plan has been in effect in the Dakotas for many years and also in Texas and Oklahoma. The plan had greatly increased interest in the Association in Colorado; before this legislation was enacted the attendance at the annual meetings was, almost invariably, very small. Since then the attendance has gradually grown. He assumed that the members considered that as long as they paid for the up-keep of the Association that they might as well attend the meetings.

He pointed out that there might be some conflict between employers and employees especially in the matter of legislation and this had come up during the last session of the Legislature.

President Beard stated that he did not like the idea of involuntary membership. In his opinion to a certain extent it violated the code of ethics. In North Carolina the amount which can be obtained by the $1.00 assessment would be comparatively small compared with what is received under their present arrangement. He referred also to the fact that by having the voluntary membership a member could be suspended or expelled for unethical practice and this would be rather difficult in associations that had the compulsory plan.

Secretary McCullough said that states contemplating legislation of this kind should ask that the State Board of Pharmacy pay over part of the money received for registration but not provide for membership in the Association thereby. Indiana does not provide membership through registration.

Secretary Kelly stated that if arrangements could be made to disseminate information more completely it would be of value to all the secretaries. If the information of activities in the different associations could be sent out to the secretaries of all the associations, it would be very helpful. He referred to the letter read by Secretary Hayman and said that he always looked forward to the monthly bulletins issued by him. He also asked that every secretary interest himself to make Pharmacy Week the best in its history. He stated further that he will be glad to see that information of the activities of the Maryland Association will be sent to all the secretaries.

Secretary McLemore was glad that this had been brought out and he wondered whether a resolution might be adopted to send out a questionnaire to each of the secretaries asking relative to the constitution and by-laws and information relative to their association activities which might be used to advantage. He made a motion that the Secretary of the Conference, therefore, be requested to send out a questionnaire to each secretary, incorporating in it questions for information. The motion was seconded and carried.

Secretary Oslin said he would like to have a list of every secretary together with the addresses.

President Beard said that was given in the roster of the JOURNAL OF THE A. PH. A.

Secretary Adams thought it would be a good idea for each secretary to submit questions to be included in the questionnaire. In all likelihood some would want information that others would, perhaps, not think of. That will assist the Secretary.

President Beard suggested that before getting out the questionnaire the Secretary should write to the secretaries and find out what information would be of value and then compile this data in the form of a questionnaire.

This was presented in the form of a motion, duly seconded and carried.

President Brown, of Pennsylvania, said he was substituting for Secretary Pilchard. He said that Pennsylvania had the same problems that other states had. They had some local associations that functioned by themselves and this interferes with what the State Association endeavors to do. Until about four years ago the northern section of Pennsylvania was very poorly represented. A county association was formed and started off with a dinner. There were more than 200 present. Dr. C. Leonard O'Connell came from Pittsburgh and addressed the

meeting. He stressed organization and the result was that the state organization membership was increased by 65 per cent. The Pennsylvania state dues are $5.00 and the county dues are $5.00. The county association has had several other entertainments which have proven successful. One occasion, an annual dinner was arranged, so that the physicians and pharmacists met during the same evening and after the close of the banquet there was a general discussion relative to matters that interested the members of both professions.

He said such items as cutting prices and the like were not taken up at these meetings. The County Association has contributed largely to the increase of membership in the State Association, and has been active in bringing pharmacists and physicians together. Among the subjects the principal ones dealt with the Pharmacopœia and National Formulary. In his opinion the greatest success in county organizations is through the personal interviews with pharmacists. Arrangements have been made for visiting every pharmacist in the county and this relationship has also brought about a larger attendance at the state meetings.

Secretary Harring asked President Brown what success they have had with store emblems. He replied that they use a sign which says "This store is a member of the Pennsylvania Pharmaceutical Association," therefore the members of the State Association are known. It does not cost much and they considered it a successful venture.

Secretary Hayman asked whether a new sign was given each year. The reply was in the affirmative.

Secretary Hayman inquired whether all used the sign and this question also was answered in the affirmative.

Secretary McCullough asked relative to the banquet whether the collection was made before or during the meeting; he was informed that this was done by personal visitation.

Secretary McCullough asked that other secretaries send him their constitution and by-laws.

Secretary Philip said that for eleven years they have had no constitution and by-laws. He contended that when the constitution and by-laws were not enforced there is a certain amount of contempt for the organization. If there is no constitution its actions become flexible.

President Beard stated that the Conference should embody at least a majority of state association secretaries. During the year he had written every president of the State associations telling them about the object of the Conference and requesting that the secretary attend the meeting. As a result several secretaries were in attendance at this meeting. He hoped that this year further effort would be made. He referred to the fact that in the JOURNAL OF THE A. PH. A. there is a roster of the officers of every state association which would enable the Secretary to address these officers telling them of the benefits to be derived, and asked for representation of the respective associations at the next meeting. He thought that each one present, if he had benefited by the meeting, could write a letter to the officers of other associations.

Secretary MacLemore stated that if it had not been for such a letter he would not have been here; he obligated himself to write a letter of this kind to every one of the presidents and be in attendance at the Toronto meeting.

Secretary Adams thought a letter should be sent to the president and another to the secretary.

Secretary Clayton moved that the incoming secretary be instructed to send to those who are here a complete list of the membership of the Conference.

Secretary Philip then presented an outline of the Philip survey and explained its purposes.

A motion was made and duly seconded that the paper be published.

Secretary Philip stated that a summary of the article had been prepared and was being sent to every publication of the drug trade in the United States, Canada and Australia.

Secretary Clayton stated that he would like to have incorporated in the motion that the Conference express its interest in every way possible for surveys in the different states.

Secretary Adams said that Secretary Philip had started a movement which should be given, as far as possible, hearty coöperation. The coöperation of the Conference was expressed.

President Beard said that if Secretary Philip raises this movement to a living hope we will owe him a debt of gratitude. If he gets it through he has done something good and I know if anybody can get it through, he will.

President Beard referred to the fact that a member of the Conference had been elected President of the AMERICAN PHARMACEUTICAL ASSOCIATION, and he wished for Secretary Adams, soon to be President, a very profitable year, and a splendid year for the ASSOCIATION.

Secretary Adams thanked President Beard and stated that he was glad that he would have as his *First Vice-President*, the President of the Conference of Secretaries.

Secretary Philip was asked to report for the Committee on Nominations. He reported as follows: For *President*, Charles J. Clayton, Colorado; *First Vice-President*, Walter D. Adams, Texas; *Second Vice-President*, J. W. Slocum, Iowa; *Secretary-Treasurer*, Carl G. A. Harring, Boston. *Executive Committee:* Robert Wilson, Georgia; Rowland Jones, South Dakota; J. G. Beard, North Carolina; F. J. McCullough, Indiana; and E. D. Oslin, Arkansas. In due order the nominees were elected officers for the ensuing year.

President Beard installed the President-elect and wished for him a very successful year.

President Clayton thanked the members for the honor conferred on him. The other officers were inducted by the President-elect and all of them expressed their appreciation and thanks for the recognition given them.

Secretary Hayman moved a vote of thanks to the retiring president. It was carried unanimously.

President Clayton stated that the motion embodied a well-deserved tribute. That the retiring president had not only worked hard for the interests of this Conference but had done wonderful work on the Syllabus. He stated that Secretary Beard was somewhat impatient at times, and as a result when the members of a Committee do not come through with their work he goes ahead and does it himself.

Secretary McCullough stated that the report on the Philip Survey was most important and he moved an endorsement by the members of the Conference of the high motives which prompted the author. The motion was seconded and carried by vote. (This is embodied in Resolution No. 25, printed in the August JOURNAL, A. PH. A., page 810.)

President Clayton brought along with him a program gotten out by the Colorado Association this year. He remarked that the program not only paid for itself but $600.00 were left to be divided by the Allied Drug Travelers and the Colorado Association.

By motion duly made and seconded a Final Session of the Conference of Pharmaceutical Secretaries was adjourned.

Dean G. A. Burbidge, in acknowledging his election to honorary membership in the AMERICAN PHARMACEUTICAL ASSOCIATION expresses his grateful appreciation, writes:

"I take it as a gesture of goodwill to the Canadian Association. As such it adds another link to the chain of courtesies and expressions of interest which you have held out to us in recent years. Our young Association is glad indeed to be bound in ties of friendship and helpfulness to yours, so rich in the knowledge and widsom that comes from years of experience and a multitude of counsellors. Our members join with yours in the hope that these ties will be still more firmly knitted in our meeting next year.

"Will you please accept on behalf of your Association my warmest appreciation and thanks?"

We are advised of the omission from the list of registrants at the Miami meeting, the names of Prof. and Mrs. Clarence M. Brown, of Columbus, Ohio, and of former president, A. PH. A., Charles Herbert Packard, of Boston, Mass.

CONGRATULATIONS.

Announcement has been made of the marriage of Emilie, daughter of Dr. and Mrs, Charles E. Caspari, to Dr. Charles W. Duden, St. Louis, on September 12th.

J. Bryan Pilchard, secretary of Pennsylvania Pharmaceutical Association, and Alice Martin Sheridan, of Pittsburgh, Pa., September 16th.

Eugene R. Selzer, life member of the AMERICAN PHARMACEUTICAL ASSOCIATION Cleveland Heights, Ohio, has completed his fiftieth year in pharmacy. He was apprenticed to the late E. A. Shellentrager, October 15, 1881. The latter was a loyal member of the A. PH. A.

Our fellow member **A. L. Morgan,** of Camden, Ark., is the treasurer of Coachita County.

Morris Kantor, member of the A. PH. A., is one of the lecturers at Hudson River State Hospital School of Nursing.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1931–1932.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

LETTER NO. 3.

September 18, 1931.

To the Members of the Council:

25. Motion No. 1 (see Council Letter No. 2, page 999) has been carried and the minutes of the first meeting of the Council are approved.

26. Resignation of Dr. Kremers. Motion No. 2 (see Council Letter No. 2, page 999) has been carried and Dr. Kremers' resignation as a candidate for the presidency is accepted. A note to this effect is being placed on the official ballot.

27. Use of the Text of the N. F. V. Motion No. 3 (see Council Letter No 2, page 999) has been carried and Professor Ballard is being advised.

28. Motions Nos. 4 and 5 (see Council Letter No. 2, page 999) have been carried and applicants numbered 1 to 23, inclusive, and H-1 to H-7, inclusive, are declared elected.

29. Use of Text of N. F. V. Dr. Thomas L. Stedman has applied for permission to use the text of the National Formulary V for partial reproduction in his Fifth Edition of a Nurse's Medical Dictionary. The request, as well as sample proof, was submitted to Chairman DuMez of the Committee on Publications, who writes as follows:

> "In response to your communication of the 5th instant, it is stated that in my opinion Dr. Stedman should be charged the minimum fee of $5.00 for the partial reproduction of the text of the National Formulary in a nurse's dictionary. I base this opinion on the fact that the text is used in much the same manner and to about the same extent as in other instances where we have made this charge."

(*Motion No. 6*) *It is moved by DuMez that permission be granted to Dr. Stedman for partial reproduction of the text of the National Formulary V in the preparation of a nurse's dictionary and that the minimum fee of $5.00 be charged for this purpose.*

30. Local Secretary for 1932 Meeting. Dr. Bradley and Secretary Kelly have been in correspondence with Secretary Stanbury of the Canadian Pharmaceutical Association and others in reference to the arrangements for the A. PH. A. meeting in Toronto next year. Secretary Stanbury will be in general charge of arrangements for the meeting of the Canadian Association and has indicated his willingness to act as Local Secretary for the A. PH. A. meeting.

Dr. R. B. J. Stanbury is nominated by Bradley as Local Secretary for 1931–1932. If other members of the Council desire to submit nominations, they are requested to do so promptly in order that a vote may be called for at an early date.

31. Time and Headquarters for the 1932 Meeting. Secretary Stanbury recommends that the Royal York Hotel, Toronto, be chosen as headquarters and the week of August 22nd–27th as the time for the 1932 meeting. This time is suggested as the Canadian National Exposition opens on Friday, August 26th, and this arrangement will give those attending the joint meeting an opportunity to visit the Exposition after the joint meeting has closed.

The Royal York Hotel has ample meeting room accommodations for both Associations and will not take any other organizations at this time. The hotel will also reserve enough rooms to accommodate those attending the A. PH. A. meeting.

(*Motion No. 7*) *It is moved by Bradley that the Royal York Hotel, Toronto, Canada, be approved as the headquarters and the week of August 22nd–27th as the time for the 1932 meeting.* A vote will be called for on this motion in about ten days.

32. Investment of Funds. The Committee on Property and Funds wishes to report that in accordance with the authority given the Committee (see item No. 126, Council Letter No. 13—A. PH. A. JOURNAL for August, page 839) and after consultation with the Chairman of the Committees on Headquarters Building and the Secretary, $275,000.00 of the cash in the Savings Account of the Headquarters

Building Fund has been invested in the issue of United States Bonds of September 15, 1931, bearing three per cent interest and maturing 1951–1955. The bonds were purchased at par and without charge through the courtesy of the Maryland Trust Company, Drovers and Mechanics Branch, in which the Savings Account has been carried.

E. F. KELLY, *Secretary.*

LETTER NO. 4.
October 13, 1931.

To the Members of the Council:

33. Use of Test of the N. F. V. Motion No. 6 (see Council Letter No. 3) has been carried and Dr. Stedman has been advised.

34. Local Secretary for 1932 Meeting. As no other nominations have been received (see Council Letter No. 3) a vote is called for on the following motion.

(*Motion No. 8*) *It is moved by Bradley that Dr. R. B. J. Stanbury be elected Local Secretary for 1931–1932.*

35. Time and Headquarters for the 1932 Meeting. A vote is called for on Motion No. 7 (see Council Letter No. 3.)

36. Expression of Appreciation. As mentioned in connection with item No. 32 (see Council Letter No. 3) the Maryland Trust Company and its President, Mr. W. Graham Boyce were very considerate and helpful in the purchase of the Treasury Bonds for the Headquarters Building Fund and have made no charge for their service.

(*Motion No. 9*) *It is moved by Dunning that the secretary be requested to express in a letter to President Boyce the appreciation of the Council for the coöperation of the Maryland Trust Company and its officers.*

37. Depository for Securities. The Maryland Trust Company, Baltimore, Md., has been approved as a depository for funds (see Council Letter No. 13, 1930–1931, item No. 126). As it was necessary to rent an additional safe deposit box to accommodate the U. S. Government Bonds purchased for the Headquarters Building Fund, it was thought best to rent this in the Maryland Trust Company vault. President Adams as Chairman of the Committee on Property and Funds, recommends the approval of the Maryland Trust Company as a depository for securities.

(*Motion No. 10*) *It is moved by Adams that the Maryland Trust Company be approved as a depository for securities.*

38. Safe Deposit Box. The Maryland Trust Company has requested Secretary Kelly and Treasurer Holton to file a properly executed certificate giving them the joint right of access to and control over the contents of Box No. 2167 in their vault. A copy of the certificate is given in Council Letter No. 9, 1921–1922, on page 219 of the JOURNAL for March 1922—and is to be signed by the president and secretary.

(*Motion No. 11*) *It is moved by Dunning that C. W. Holton, as treasurer of the Association, and E. F. Kelly, as treasurer of the Headquarters Building Fund, shall have joint access to and control over Box No. 2167 in the safe deposit vault of the Maryland Trust Company, and that a certificate for this purpose be executed by the president and the secretary.*

39. Use of the Text of the N. F. V. Dr. J. R. Blayney of the College of Dentistry, University of Chicago, and chairman of the Associate Subcommittee on Dental Preparations of the N. F., has applied for permission to use portions of the text of the N. F. V in his textbook on Dental Pharmacology and Therapeutics. After correspondence with Dr. Blayney in reference to the extent of use, Chairman DuMez, of the Committee on Publications, writes as follows:

> "I will, therefore, recommend to the Council that permission be granted to Dr. Blayney to use the text of the National Formulary for comment in his forthcoming book, and that a nominal fee of $5.00 be charged him to protect our copyright."

(*Motion No. 12*) *It is moved by DuMez that permission be granted to Dr. J. R. Blayney for partial reproduction of the text of the N. F. V in his textbook on Dental Pharmacology and Therapeutics and that the minimum fee of $5.00 be charged him.*

40. Investment of Funds. Treasurer Holton wishes to report that a $1000 Town of Montclair Bond, 4¼%, maturing October 15, 1945, has been purchased on a 4.05 basis for each of the following funds: Ebert Legacy, Life Membership, Research and Procter Monument—in accordance with the action of the Council. (See Council Letter No. 9, 1930-1931.)

41. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 24, Charles William Alcott, 820 Frank St., McKees Rocks, Pa. (Associate); No. 25, Mary Elizabeth Bowen, University Hospital, Ann Arbor, Mich.; No. 26, John Calvin Brantley, Jr., 120 S. Boyland Ave., Raleigh, N. C.; No. 27, William McKinley Fraser, 4411 Stanton Ave., Pittsburgh, Pa. (Associate); No. 28, Herbert H. Gurvis, 11,617 Dexter St., Detroit, Mich.; No. 29, Robert A. McKenzie, 500 Hannah St., Houtzdale, Pa. (Associate); No. 30, Albert Henry Moore, 511 Opelousas Ave., New Orleans, La.; No. 31, Wm. H. Neary, 117 Sioux St., Sioux City, Iowa; No. 32, Karl Houister Nelson, 2239 W. 24th St., Los Angeles, Calif.; No. 33, Alex Rosenthal, 5829 Phillips Ave., Pittsburgh, Pa. (Associate); No. 34, Nate S. Shapero, 1927 12th St., Detroit, Mich.; No. 35, Eula L. Smith, 1029 Garrison St., Fremont, Ohio; No. 36, John F. Suchy, % State University, Missoula, Mont.; No. 37, Christopher F. Trombetta, 702 Michigan Ave., Glassport, Pa. (Associate); No. 38, John Vangor, 86 Cleveland Ave., Bridgeport, Conn.; No. 39, Ralph S. Whittaker, Hayden, Colo.; No. 40, Katherine Sally Wilcox, University Hospital, Ann Arbor, Mich.; No. 41, Leo Stangle, 6830 Normal Blvd., Chicago, Ill.; No. 42, Nathan Levin, 3123 Warren Blvd., Chicago, Ill.

(*Motion No. 13*) *Vote on applications for active membership in the American Pharmaceutical Association.*

42. Western Reserve University Student Branch, A. Ph. A. There is submitted below an application signed by twenty students of the School of Pharmacy who have filed their applications for associate membership, for the formation of this Branch.

> "We, students of the School of Pharmacy of Western Reserve University, desire to establish a Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION at Western Reserve University and hereby petitition the Council of the American Pharmaceutical Association to recognize us as such. The consitution and by-laws are herewith submitted for approval.
>
> Charles R. Bennet
> Francis Bihn
> George H. Bruehler, Jr.
> George H. Gerlach
> Michael G. Girbino
> David M. Goldberg
> Meyer H. Goldberg
> Theodore E. Gutkowski
> Gustav C. Kostell
> Samuel L. Leiner
> Samuel Lester
> John C. Merisicky
> Edwin W. Miller
> Julius Miller
> John A. Obester
> Merwyn R. Rosene
> Karl W. Schweickardt
> Ray R. Stemple
> Winton A. Webb
> Albert L. Wells"

PREAMBLE AND BY-LAWS OF THE WESTERN RESERVE UNIVERSITY STUDENT BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

We, students of the School of Pharmacy of Western Reserve University, in order to allign ourselves more definitely with those who are promoting the best interests of professional pharmacy, and thereby more effectively stimulate our own interests and efforts for the good and welfare of our chosen profession, do hereby adopt the following by-laws:

1. Name.—The name of this organization shall be "The Western Reserve University Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION."

2. Organization Status.—This Branch shall be a subsidiary branch of the Northern Ohio Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION. Except for the specific provisions of these by-laws, the constitution and by-laws of each organization concerned shall take precedence in the following order:

(*a*) AMERICAN PHARMACEUTICAL ASSOCIATION
(*b*) Northern Ohio Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION
Reference: JOUR. A. PH. A., Vol. XVIII, No. 4 (Apr. 1929), 419.
(*c*) Western Reserve University Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The Student Branch shall have a distinct status at all times, and its accounts kept separately.

3. Members.—The members of this Branch shall be elected from among the bona fide students of the School of Pharmacy of Western Reserve University, who shall have met the requirements for associate membership in the AMERICAN PHARMACEUTICAL ASSOCIATION, and for student membership in the Northern Ohio Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION.

4. Officers.—The officers of the Student Branch shall consist of a President, a Vice-President and a Secretary-Treasurer. All shall hold office for one year, or until their successors are elected and qualified. In case of absence or temporary disability, the chairmen of the Program and Membership Committees, in the order named, shall substitute for either the Vice-President or the secretary-treasurer at any regular meeting.

5. Committees.—Within ten days subsequent to his election, the president shall appoint a Program Committee of three members. The chairman of the Program Committee of the Northern Ohio Branch shall be a member, exofficio, of this Committee. The president shall also appoint a Membership Committee of three members. The chairman of the Student Activities Committee of the School of Pharmacy of Western Reserve University shall be a member, ex-officio, of this Committee. The officers of the Student Branch and the chairmen of the Program and Membership Committees shall constitute the Executive Committee to transact the necessary business of the Student Branch.

6. Meetings.—The meetings of the Student Branch shall be held on the second (2) Friday of each consecutive month from October to May, inclusive. When requested to do so by the chairman of the Program Committee of the Northern Ohio Branch, the Student Branch shall take full charge of one joint meeting each year. Special meetings may be called by the president at such times and places as the Executive Committee may deem to be expedient and must be called by him on the written request of seven members of the Student Branch.

7. Elections.—Election of Officers shall be by ballot at the regular October meeting. Vacancies shall be filled by the Executive Committee.

8. Quorum.—Seven (7) members shall constitute a quorum.

9. Order of Business.—

(*a*) Call to order
(*b*) Reading of the minutes of the previous stated meeting
(*c*) Unfinished business
(*d*) New business
(*e*) Program
(*f*) Nominations and elections
(*g*) Adjournment.

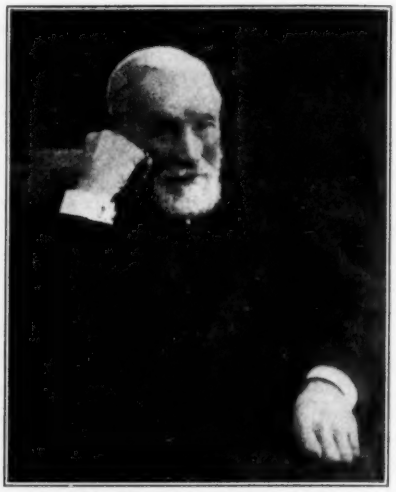
10. Amendments.—These by-laws may be amended or altered only by and with the consent of the Policy Committee of the Northern Ohio Branch after a petition in writing, signed by two-thirds of the student branch membership, has been submitted.

The Secretary of the ASSOCIATION is advised that the officers of this Student Branch will be elected within a few days and that the Branch will then be prepared to proceed with its program.

(*Motion No. 14*) *It is moved by Kelly that the application for the formation of the Western Reserve University Student Branch of the American Pharmaceutical Association and the Preamble and By-Laws of the Branch be approved.* If any member wishes to discuss this motion, it will be considered as tentative.

E. F. KELLY, *Secretary.*

Pharmaceutical Institute at Rostock where Dragendorff studied, 1856–1858.



EDWARD MORELL HOLMES.

Dr. Holmes was a remarkable man in the field of his endeavor and an authority in the studies he pursued—as botanist, conchologist, entomologist, horticulturalist, pharmacist and pharmacognosist.

The inscription on the above monument reads: Dorpat 1864–1894.—Prof. G. Dragendorff, born April 20, 1836, died April 7, 1898. His thankful students in Russia.

The late Ewen McIntyre, New York—lifelong member of the A. PH. A., whose observation of adulterated, imported chemicals, contributed to the organization of the AMERICAN PHARMACEUTICAL ASSOCIATION.

EDITORIAL NOTES

Editor: E. G. Eberle, 10 West Chase Street, Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* CHARLES H. LAWALL, *Vice-Chairman;* E. F. KELLY, *Secretary;* H. V. ARNY, A. G. DUMEZ, H. A. B. DUNNING, WILLIAM B. DAY, C. E. CASPARI, J. H. BEAL, W. BRUCE PHILIP, T. J. BRADLEY. *Ex-Officio Members:* WALTER D. ADAMS, *President;* J. G. BEARD, J. W. DARGAVEL, *Vice-Presidents;* C. W. HOLTON, *Treasurer;* E. G. EBERLE, *Editor of the Journal;* A. G. DUMEZ, *Editor of the Year Book;* THOMAS ROACH, *Chairman of the House of Delegates.*

Collaborators: The Members of the Council; E. FULLERTON COOK, *Chairman,* U. S. P. Revision Committee; E. N. GATHERCOAL, *Chairman,* N. F. Revision Committee; Chairmen of the Sections, A. PH. A.: L. E. WARREN, C. J. CLAYTON, W. G. CROCKETT, ROWLAND JONES, J. T. LLOYD, TOWNES R. LEIGH, *President,* A. A. C. P.; CHARLES B. JORDAN, *Chairman,* Executive Committee, A. A. C. P.; A. L. I. WINNE, *President,* N. A. B. P.; HENRY C. CHRISTENSEN, *Secretary,* N. A. B. P. Scientific Section—Board of Review on Papers: *Chairman,* GLENN L. JENKINS, Baltimore, Md.; EDWARD E. SWANSON, Indianapolis, Ind.; W. J. HUSA, Gainesville, Fla.

PRESIDENT HOOVER'S PHARMACY WEEK MESSAGE.

President Hoover has issued the following communication from the White House in connection with the international observance of Pharmacy Week, October 11th–17th:

"The observance of National Pharmacy Week, October 11th to 17th, is an appropriate time to recognize the service which pharmacy renders to the public health. Research in scientific laboratories constantly adds to the armamentarium of our health forces. The drug stores of the land are the channels through which these new resources for treatment of the sick and the prevention of disease are brought promptly within reach of the people. Pharmacists are the indispensable allies of the physicians. The importance of high standards of product and professional practice in pharmacy may well be more generally recognized, and Pharmacy Week is a commendable educational effort to that end."—HERBERT HOOVER.

RED CROSS, CHRISTMAS SEALS AND CANCER CONTROL.

Pharmacists are always interested in promotions for health conservation. Mention is made at this time, because of the approaching season during which special efforts are made to secure the means for aiding the afflicted by giving support to important undertakings for relief by the Red Cross, control of tuberculosis by the sale of Christmas Seals, and of Christmas shopping booklets and labels.—The latter has the full endorsement of the National Tuberculosis Association and may be had by addressing the American Society for the Control of Cancer, 34 E. 75th St., New York City.

ROBERT URIE PATTERSON.

Surgeon General R. U. Patterson received his M.D. degree from McGill University, later he was an honor graduate from the Army

ROBERT URIE PATTERSON.
Surgeon General U. S. Army.

Medical School and, in 1901, was appointed Assistant Surgeon, U. S. A., from Maryland. In the same year he was ordered to the Philippines, where he took part in the stirring

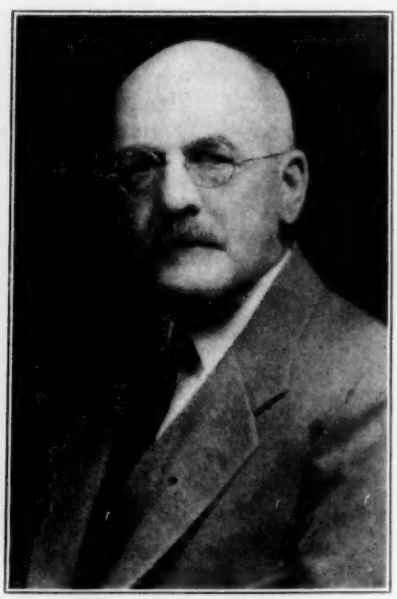
days, not always in the capacity of a medical officer—two silver citations speak, in part, for his gallantry.

He has seen service in the appointments which come to medical officers in due course and in performance of duties well done. Numerous campaign and service badges and recognition by other countries testify to his ability and distinguished services; it is almost needless to say that he was assigned to important duties and stations during the World War. Since then he has served as instructor in the Army War College, Medical Director, U. S. Veterans' Bureau, Commanding Officer of the Army and Navy General Hospital, Hot Springs, etc., and, lately, Department Surgeon in Hawaii, from which post he was called to Washington to be made Surgeon General.

He is one of five brothers who held commissions in the U. S. Army.

DR. JOHN ROY MINEHART.

Dr. John R. Minehart will celebrate the 25th anniversary of his deanship of the School of Pharmacy, Temple University. After graduation in Pharmacy at Medico Chirurgical College, in 1900, he entered the Medical



JOHN ROY MINEHART.

College, completing the course in 1903. In 1904 he served as surgeon on the flagship Medjidea of the Turkish navy during the Russo-Japanese war, receiving a decoration from Abdul Hamid, for faithful services rendered.

Returning to this country, Dr. Minehart became a member of the pharmaceutical and also of the medical faculty of his Alma Mater. In 1907, he was elected dean of Temple University School of Pharmacy. He exhibits his interest in medicine and pharmacy by his affiliation and active participation in the organizations of both professions; he became a member of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1905. Mrs. Minehart is well and favorably known as a dramatic coach; the children are: John R. Jr., a medical student; Thomas Z. is studying law, and the daughter, Catherine, is in the college preparatory school.

INTERNATIONAL HOSPITAL ASSOCIATION.

The International Hospital Association was organized at the second International Hospital Congress, held in Vienna. Two classes of members are admitted, one including persons connected in various ways with hospitals and another including representatives of firms or organizations standing in business relationship to hospitals. Ten permanent committees were established to work out standards for the guidance of the hospital field throughout the world. Dr. Rene Sand, Paris, is president and E. H. Lewinski-Corwin, Ph.D., New York, is secretary general of the association.

U. S. MARINE HOSPITAL AT GALVESTON.

The United States Marine Hospital which was erected in Galveston at a cost of $1,000,000 will be ready for occupancy in November.

Plans for its formal opening are being completed when the Federal hospital and the new State Psychopathic Hospital will be jointly dedicated.

The Marine Hospital will open with a 100-bed capacity but is capable of being expanded to 150.

THE RAT PROOFING OF VESSELS.

The third edition of "The Rat Proofing of Vessels" has been issued by the U. S. Treasury Department, Public Health Service. It has drawings illustrating the general instructions for rat proofing ships compiled and promulgated by the American Marine Standards Committee. The work was done by S. B.

Grubbs, *Medical Director* and B. E. Holsendorf, *Chief Pharmacist*, U. S. Public Health Service.

TESTS FOR GLASS CONTAINERS.

By a decree of the Reichsrat the tests for glass ampuls and other bottles in which medicines are dispensed, included in the sixth edition of the German Pharmacopœia, have been replaced by the following new tests which have become effective.

Glass Ampuls for Solutions of Alkaloidal Salts.—Five grams of the sieved powdered glass is introduced into a flask of Jena glass in which previously distilled water has been boiled. By means of repeated decantation with distilled water or with alcohol the last remnants of glass dust are removed from the powder. The powdered glass thus contained is then mixed with 100 cc. of distilled water, 0.44 cc. of $N/100$ hydrochloric acid, and 1 or 2 drops of solution of methyl red, and heated for 30 minutes on a boiling water-bath. At the end of this period the red color of the liquid should not have completely disappeared.

Medicine Bottles.—The medicine bottle to be tested is first thoroughly cleansed with distilled water and then filled with an aqueous solution of narcotine hydrochloride (1 + 199); in the case of bottles with a capacity not exceeding 100 cc. as far as the base of the neck, and in the case of larger bottles the bottle is approximately half filled with the above solution. The solution of narcotine hydrochloride is to be freshly prepared without the aid of heat and, if necessary, filtered after standing for twenty-four hours, using a flask of Jena glass in which distilled water has previously been boiled. At the end of one hour at the most a scarcely preceptible crystalline precipitate should be apparent in the bottle, which should not exhibit any cloudy or flocculent precipitate of free narcotine base. —Through *Chemist and Druggist.*

MARYLAND WORMSEED HARVEST.

Maryland's crop of Chenopodium is now being harvested, and is said to represent the source of 90 per cent of the world's wormseed oil. According to N. R. Mueller of the United States Department of Agriculture, the raising of wormseed for oil began in Carroll County about 1840.

PERSONAL AND NEWS ITEMS.

Dr. James A. Spalding, our honorary fellow member was honored, on September 25th, at a dinner in his honor, by the presentation of a painting of him to the Board of Directors of Maine General Hospital. Dr. Spalding has been ophthalmologist at the hospital named since 1841. Recently, he celebrated his 85th birthday. Those who attended the Portland, Me., meeting will remember him; he is a grandson of Dr. Lyman Spalding, father of the United States Pharmacopœia.

President Walter D. Adams, A. PH. A., was called home from the Detroit meeting of the N. A. R. D. by the death of the widow of his brother, the late F. M. Adams, a pioneer druggist of Texas. Sympathy is expressed.

Never before have pharmaceutical publications and organizations contributed so largely to Pharmacy Week, each should receive some mention. The same applies to wholesale and manufacturing establishments.

Dean Frederick J. Wulling of the University of Minnesota, College of Pharmacy, announced that in addition to other activities, one hour preceding College Convocation was devoted with the student body to the consideration of Pharmacy Week and its objects and purposes.

We have received the minutes of the 47th Annual Convention of the Minnesota State Pharmaceutical Association. A number of valuable papers are included; particular mention should be made relative to "Garth's Dispensary," by F. J. Wulling and Emerson G. Wulling.—"A violent quarrel between the apothecaries anent whether pharmacists had a right to prescribe and physicians had a right to dispense. Of the mass of controversy Dr. Garth's mock-epic poem alone remains in prominence. Dr. Garth intended to satirize the apothecaries, but he succeeded in satirizing his fellow physicians more effectively."

The October issue of the *National Drug Clerk* is devoted almost entirely to articles on the observance of Pharmacy Week, window display suggestions, etc.

The *Bulletin of Pharmacy*, Havana, contains an account of the visit of the AMERICAN PHARMACEUTICAL ASSOCIATION to Cuba; the addresses made at the interesting ceremonies. Among those participating in the program were: Dr. J. Capote Diaz, Dr. José P. Alacán, Dr. A. P. André, Chairman E. Fullerton Cook, President Walter D. Adams.

The *Pharmaceutical Journal* of New Zealand contains an editorial sketch of the late Robert J. Ruth.

Revista Farmaceutica de Puerto Rico.—The September journal of this valued publica-

tion discusses the harmfulness of marihuana. This article is by Dr. E. L. Alfaro Diaz. Mention is also made of the contributions from various sources relating to pharmacy. In another article the pharmacists who have made important discoveries are mentioned. Several pages are also devoted to Pharmacy Week.

The *Druggists Circular*, October issue, portrays the late Robert J. Ruth at different periods of his life, from boyhood up. Dr. J. Leon Lascoff's pharmacy is pictured—it is titled "a professional wonder shop."

The *American Druggist* for October is rightly named a "Pharmacy Week Number;" it is particularly interesting because of its historical illustrations, depicting periods of pharmacy and its contributions to the industries and medical service.

The *Pacific Drug Review*, for October is a "Special Pharmacy Week Number," most of the articles feature pharmacy.

The *Pharmacy News Bulletin*, issued by the Drug Trade Bureau of Public Information, has been full of interest and appeal to the daily press—watch your papers for such news items and give support to this work by which the drug trade and pharmacy profits. The editor is Dr. Robert P. Fischelis. A larger number of pages in the JOURNAL has made it impossible, lately, to abstract these valuable bulletins, but reference to these bulletins will soon be taken up.

As secretary of the New Jersey Board of Pharmacy and for use by New Jersey Pharmaceutical Association, Dr. Fischelis arranged for radio broadcasting.

The deans of a number of pharmacy schools have entered into the spirit of Pharmacy Week and carried radio messages to the public, and addresses before various clubs and other organizations have made its members better acquainted with the service of pharmacy.

Those who failed to hear Dr. Howard W. Haggard by "listening in" should send for a copy of the address to the Eastman Kodak Company.

Merck & Company are continuing their messages in the *Report* and other means of pharmaceutical publicity notably, by the addresses of Prof. Anton Hogstad.

The Northwest Pharmaceutical Bureau reprinted four of the newspaper stories on the services of the pharmacist, sent out by the National Pharmacy Week Committee. The *Northwestern Druggist*, which coöperates closely with the Bureau, has published a strong October Pharmacy Week issue.

The Golden Anniversary Proceedings of Nebraska Pharmaceutical Association, besides the minutes of the sessions, contains a number of excellent addresses and papers. The cover is indicative of the 50 years of activity in behalf of Pharmacy of the Association.

The 24th annual report of Oklahoma State Board of Pharmacy has recently been issued. The volume contains a list of registrants and other valuable information.

Minnesota Pharmaceutical Asssociation has established a Fellowship Fund, amounting to $500 annually; it is given in the Graduate School of the College of Pharmacy. Since 1918, the Association has given an annual scholarship to the student making the best grades in the first three school years.

In addition to the transactions of Texas Pharmaceutical Association, the *Texas Druggist*, official organ, has given space to State and National associations; also addresses of delegates and others, the address by Congressman Martin Dies on "The Right of the Independents to Be in the Drug Business" deserves especial mention. Pharmacy Week received liberal attention.

As part of the contribution to Pharmacy Week an address by a former president, Henry F. Hein and a broadcast sponsored by San Antonio Drug Company is mentioned.

It should be repeated that there has been so general response and coöperation of manufacturers, wholesalers, and publications, the press and others, that it is impossible to name all, let alone give them deserved mention of their part in the Pharmacy Week program.

Indiana Pharmaceutical Association is encouraging Pharmacy Week by prizes—A free trip to the 1932 State Convention and ten free memberships to the I. Ph. A. are the awards offered by the State Association to those submitting the pictures of the best window trims during National Pharmacy Week.

Many other states have arranged awards as encouragement by presenting beautiful cups. Here, too, the list of awards makes it necessary to speak in a general way and, if possible, list the awards by states when the Pharmacy Week reports come in.

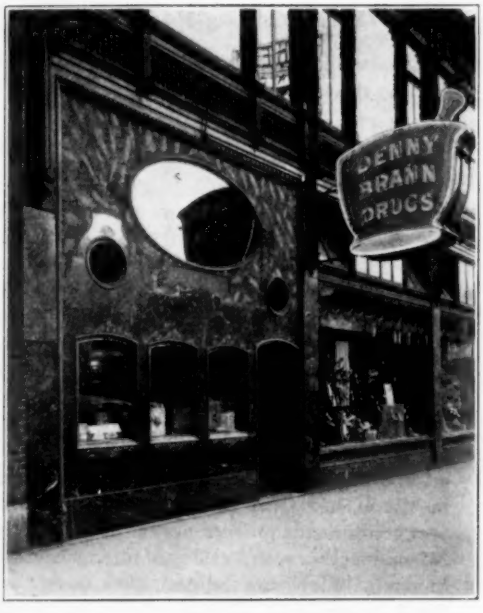
Mention should be made of the Pharmacy Week publicity given through the interesting and informative *bulletins* of West Virginia Association, the *Califorina Pharmaceutical*

Association Bulletin, Portland Weekly Information Bulletin, the State publications, etc.

Several forceful editorials appear in the *Maryland Pharmacist*, among them "The A. PH. A.—A Great Moral and Practical Force" and "The Independent Has the Power."

We are indebted to Secretary Kerfoot for a list of the members of the District of Columbia Retail Druggists' Association.

The *Army and Navy Register*, in its issue of October 10th, reprinted the address of Lieut. Col. Arnold Tuttle before the AMERICAN PHARMACEUTICAL ASSOCIATION at its Miami meeting.



Exterior of Denny Brann Pharmacy.

The pestle in the mortar revolves. The front of the pharmacy is of Italian marble. The interior is shown in the September JOURNAL.

REMINGTON HONOR MEDAL AWARD.

The formal Remington Honor Medal award will be made to E. Fullerton Cook by the New York Branch, A. PH. A., at a dinner to be held in his honor at Philadelphia, November 16th.

RHO CHI SOCIETY.

The annual meeting of Rho Chi, Honorary Pharmaceutical Society, was held at Miami, Florida, July 29th. Fifteen of the nineteen chapters were represented by accredited delegates; three of the four national officers were in attendance and a number of other members of the Society. About thirty-five people attended the dinner which preceded the business session.

President Jenkins, in a brief address reviewed the progress of the year, discussed some things which should be done soon and made several recommendations all of which were adopted.

Secretary Cooper and Treasurer Christensen submitted reports which were accepted.

The revised constitution, prepared by a committee under the chairmanship of Dr. Loyd Harris, was adopted.

A new ritual form, prepared by Dr. F. A. Gilfillan and his committee, was adopted.

Officers, elected for the ensuing year, are as follows: *President*, Dr. Glenn L. Jenkins, University of Maryland, Baltimore; *Vice-President*, Dean Earl R. Serles, South Dakota State College, Brookings; *Secretary*, Professor Zada M. Cooper, State University of Iowa, Iowa City; *Treasurer*, Dr. B. V. Christensen, University of Florida, Gainesville; *Members of the Council*, Dr. W. G. Crockett, Medical College of Virginia, Richmond; Dr. Loyd Harris, University of Oklahoma, Norman, and Prof. Charles V. Netz, University of Minnesota.

Surveys should not overstress merchandising, however important that may be, and is. Pharmacy is the foundation of the drug business, without it a drug store may lose its identity and opportunities.

The Colleges, Boards of Pharmacy and State Associations are most important factors for developing pharmacy.—The people judge pharmacy largely by the drug store. Nearly all Pharmacy Week displays have been good publicity for pharmacy; some have not.

Pharmacy is handicapped by unrelated side-lines; it is not altogether the students' years in college, but the ideals of pharmacy inculcated, impressed and put into practice that develop pharmacy. It is essential that the results of the services rendered by pharmacists provide more than a mere living for them.

SOCIETIES AND COLLEGES.

REGIONAL MEETING OF MARYLAND PHARMACEUTICAL ASSOCIATION.

The regional meetings of Maryland Pharmaceutical Association continue to prove of interest and of value to the members and the State Association. Reference will be found to the success of these meetings in the minutes of the Conference of Pharmaceutical Association Secretaries. The recent meeting, on October 12th, was held at Cumberland and the program provided for open discussions and the following reports and papers:

"Brief Report of the N. A. R. D. Convention," Howell W. Allen.

"Brief Report of the A. PH. A. Convention," Robert L. Swain.

"Golden Jubilee of the Maryland Pharmaceutical Association," President Wm. B. Spire, Mt. Rainier.

"Some Interesting Legislative Developments," L. V. Johnson, St. Michaels.

"How to Make a State Association Appeal to a Pharmacist," Harry R. Rudy, Hagerstown.

"Motor Delivery as a Business Builder," Earl Norris, Baltimore.

"Potpurri—Pharmaceutically," Webster K. Edwards, Cumberland.

"Popularizing U. S. P. and N. F. with Physicians," Lawrence S. Williams, Baltimore.

"Essentials for a Successful Prescription Practice," George A. Stall, Baltimore.

Thirty or more attended from Baltimore and there was a total attendance of twice that number.

NORTH CAROLINA ASSOCIATION.

The October *Carolina Journal of Pharmacy* contains the minutes of the annual meeting of North Carolina Pharmaceutical Association. The officers of the Association, elected by mail ballot are: *President*, Polk C. Gray, Statesville; *First Vice-President*, A. Coke Cecil, High Point; *Second Vice-President*, J. M. Hall, Sr., Wilmington; *Third Vice-President*, H. M. Cooke, Sr., Salisbury; *Secretary-Treasurer*, J. G. Beard, Chapel Hill; *Member of the Executive Committee* for a 3-year term, C. C. Fordham, Sr., Greensboro. The newly chosen officers will be installed at the 1932 meeting in High Point and will serve for the year 1932–1933.

NATIONAL CONFERENCE OF PRESCRIPTION ECONOMICS.

The National Conference on Prescription Economics was organized at Detroit, September 28th. The purpose of the organization, it is stated, is to coördinate the work of various surveys now being conducted on prescription economics and is to serve as a clearing house for information on the subject and transmit the results of its work to the members of the organization.

The officers of the organization are: *Chairman*, Ambrose Hunsberger, Philadelphia; *Treasurer*, Thomas Roach, Oklahoma City; *Vice-Chairmen*, Swan Brookshire, Indianapolis; Denny Brann, Des Moines; Paul Lantrip, Jasper, Ala. Frank A. Delgado, Washington, was elected *Secretary*.

Chairman Hunsberger was authorized to appoint fifteen of its members to guide the work of the organization and it was ruled that membership would be open to all druggists interested in the study of prescription economics.

OFFICIAL AGRICULTURAL CHEMISTS.

The 47th annual meeting of the Association of Official Agricultural Chemists will meet in the Raleigh Hotel, Washington, D. C., November 2nd–4th. An interesting program has been prepared and many of the papers to be presented are of pharmaceutical interest. The *President* of the Association is H. D. Haskins, Amherst, Mass.; *Vice-President*, A. E. Paul, Chicago; and the *Secretary-Treasurer*, W. W. Skinner, Wash.

"The Proceedings of the National Conference on Pharmaceutical Research" for 1931 meeting in Miami, have just been published. The report contains the proceedings of the meeting in Miami together with a census of pharmaceutical research. Five hundred and three names are listed, covering all subjects relating to the divisions of pharmacy and evidences the large amount of research being done by pharmacists.

OMISSIONS.

On account of the many pages of the minutes in this issue it is necessary to omit matter from this number of the JOURNAL. There are a number of book reviews which we have been holding for some time which we hope to publish in an early issue.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

The National Association of Retail Druggists meeting in annual session at Detroit

during the week of September 28th, elected the following officers:

President, John W. Dargavel, Minneapolis; *First Vice-President*, William Rheineck, Milwaukee, Wis.; *Second-Vice President*, M. L. Powell, Denver, Col.; *Third Vice-President*, Harvey Henry, Los Angeles, Calif.; *Secretary*, Samuel C. Henry, Chicago, Ill.; *Treasurer*, Charles Ehlers, Cincinnati, Ohio; *Members of the Executive Committee*, Ambrose Hunsberger and Fred Wright. The meeting was well attended and reported as most successful; Bernard A. Bialk was *General Chairman* of the Local Committee. A feature of the meeting was the publication of a daily newspaper "The Pepper," issued by the Detroit Retail Druggists and under the direction of Fred Ingram, Jr.

JOHN W. DARGAVEL.

President Riemenschneider discussed trade conditions and reviewed the activities of the Association. Interesting reports were made by the officers and committees and the Association affairs were shown to be in a healthy condition. Appropriate resolutions were adopted and the early work of the late Leonard Tillotson in coöperation with George P. Engelhard, leading to the formation of the N. A. R. D.

RESOLUTIONS.

Among the resolutions adopted are the following:

Tendering its friendly efforts for coöperation in amending the Prohibition Act as recommended by the Wickersham Committee to remove the restriction of the number of prescriptions a physician may write, for portable alcoholics in the treatment of patients. *Commending Dr. James M. Doran* for his fair and intelligent administration. *Commending Harry J. Anslinger* for his effective administration. *Calling on retail druggists* to concentrate efforts on a campaign of education of all Senators relative to the new Capper-Kelly Bill as it affects the public and business. *Commending Congressman Clyde Kelly* for his fearless and tireless championship of the Capper-Kelly Bill. *Exerting efforts with the Federal Trade Commission* to bring about discontinuance of the practice of advertising and offering companionship sales. *Recommending amendment to Article 85 of Regulation 5*, relating to narcotic prohibition by inserting in the 9th line the following words, "And knowing such prescription or order to be forged or not coming within the exceptions named." *Recommending efforts with state associations* in behalf of legislation restricting barbituric acid preparations to retail pharmacists. *Expressing opposition to a sales tax* in any form to further import buying by the consumer. *Recommending the Federal government* to make drastic cuts in expenditures. *Recommending state pharmaceutical associations* to enact legislation patterned after the Federal Trade Commission law prohibiting unfair competition. *Approving amendment to the Sherman Act*, prohibiting only unreasonable restriction of interstate commerce. *Recommending that manufacturers return to pre-war price level* on the basis of $2.00, $4.00 and $8.00. *Recommending pharmacists who furnish prescription blanks* to physicians to insert "Unless otherwise specified U. S. P., N. F. and N. N. R. preparations be used in the prescription. *Urging manufacturers and wholesalers* to employ only registered men as salesmen calling on the retail drug trade. *Condemning excessive number of trade-marked pharmaceutical and biologic specialties* which cause needless duplication and variations from U. S. P. and N. F. preparations and urging N. A. R. D. members to call attention of physicians and patrons to such practice. Admitting predatory price cutting. *Recommending the example of California* in securing desirable legislation. *Recommending associations in securing enactment of a Junior Capper-Kelly Bill* similar to the California law. *Recommending continued coöperation in National Pharmacy Week* and expressing regret over the untimely death of Dr. Robert J. Ruth. *Condemning moving pictures* which slander the retail druggist. *Approving survey by Chicago Retail Druggist Post* with a view of obtaining legislation that will enable pharmacists to obtain Government commissions in the army, navy and marine corps. *Endorsing the Vestal Copyright Bill* as amended by the Senate. *Recommending that efforts be made to* have a standard set of regulations for drug store sub-postal stations. *Recommending that manufacturers of nationally advertised merchandise* consider answering the statements that the predatory price cutters buy more cheaply than other retailers pay for the articles. *Recommending that manu-*

facturers prosecute black-mailing or threatening buyers. That exhibition demonstrators be discontinued. Recommending that manufacturers discontinue any and all deals. Recommending that the N. A. R. D. obtain answers from manufacturers relative to the latter resolutions.

A motion asking for the repeal of the 18th amendment was lost.

Among the speakers at the convention were: Hon. Clyde Kelly, Dr. James M. Doran, Wroe Alderson, Dr. Wilmer Krusen, Carl Weeks, Paul C. Olsen, Dr. R. B. J. Stanbury and W. Bruce Philip.

The points set forth in the address of the latter are embodied in a number of the resolutions heretofore reported.

The entertainment features were briefly referred to in the September issue and were highly appreciated by those in attendance. The veterans enjoyed a luncheon as guests of Nelson Baker Co.

The secretaries of various pharmaceutical associations held an informal breakfast on October first. Among them were Walter D. Adams, Herschel M. Cummins, Robert P. Fischelis, Fred E. Fox, George Grommet, Carl G. A. Harring, Samuel C. Henry, F. V. McCullough, David F. McLemore, W. Bruce Philip, Charles T. Pickett, Roy C. Reese, R. B. J. Stanbury and R. A. Turrel.

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

The National Wholesale Druggists' Association will meet in annual session at Hotel Ambassador, Atlantic City, October 18th to 22nd. President James M. Penland and his mother will be honored with a reception on Monday night. Harry J. Schnell is chairman of the Entertainment Committee; William J. Schieffelin, Jr., will be toastmaster at the banquet; Dr. E. L. Newcomb is the secretary. The program is comprehensive and the transactions will be of usual interest and importance to all drug-trade activities.

PETITION TO REVIEW INDIANA CHAIN STORE TAX CASE REFUSED.

The plea to the Supreme Court of the United States to hear the case in which the Indiana Chain Store tax was held valid by a five to four decision, was denied by the Court on October 12th, and a formal order denying the petition for rehearing was entered without opinion.

MEDICAL ADVERTISING IN GERMANY.

After hearing the arguments in a case of medical advertising, which it was alleged to be improper, the Court absolved the defendant on the ground that the doctor who offers his services to patients is not guilty of unfair business, because he will and can help the sick. In this case the Court held that the matter under litigation could only be read as being in the spirit of protection against the quack.

THE NEW GERMAN MEDICAL LAW.

Pharmacists in Germany are complaining about the restrictions placed upon the sale of medicines. Pharmacists contend that the law robs them of the right to sell even the simplest of medicines. There is further contention relative to medical practice wherein it is alleged that manufacturers arrange with medical practitioners for writing prescriptions including their products and in return receive compensation.

PROPRIETARY MEDICINES IN PORTUGAL.

A series of regulations are under consideration for regulating the sale of proprietary medicines and pharmaceutical specialties imported from abroad. The regulations referred to became effective in August. The provision demands that such preparations must bear labels giving the name of the agent, of the maker, and also the name of the laboratory where the preparations have been analyzed or of the pharmacist who has analyzed it. Foreign languages may appear on the label, provided a Portuguese translation of the same is also printed on the label.

ALLEGED FIXED AGREEMENTS OF MANUFACTURERS WITH PHYSICIANS.

Some of the Italian manufacturers are being accused in the press because of their alleged methods in disposing of their products. *Il Popolo d'Italia* states that doctors receive certain reward in consideration of prescriptions they may execute and it is further stated that some of the doctors are partners in the respective manufacturing concerns.

It was necessary to defer other matter to a succeeding number.